

NOTES ON THE GENUS *CLERODENDRUM* (VERBENACEAE). XXV

Harold N. Moldenke

CLERODENDRUM Burm.

Additional & emended bibliography: Wight, Icon. Pl. Indiae Orient., imp. 1, 4 (3): 12 & 13, pl. 1471--1473. 1849; J. G. Baker, Journ. Linn. Soc. Lond. Bot. 22: 482 & 513. 1887; C. B. Clarke, Journ. Linn. Soc. Lond. Bot. 25: 57. 1890; Pammel, Man. Poison. Pl., ed. 2, 65, 708, 857, 858, & 932. 1911; Schubert, Contrib. Gray Herb. 154: 23. 1945; Mold. in Gleason, New Britt. Br. Illust. Fl. 3: 137 & 138. 1952; Verdcourt, Kew Bull. Misc. Inf. 1953: 119--120. 1953; Barton, Cheung, Cross, Jackman, & Martin-Sm., Journ. Chem. Soc. 1961: 5061--5073. 1961; Barton, Cheung, Cross, Jackman, & Martin-Sm., Proc. Chem. Soc. 1961: 76--78. 1961; Sim, Hamor, Paul, & Robertson, Proc. Chem. Soc. 1961: 75--76. 1961; Oakes & Butcher, U. S. Dept. Agr. Misc. Publ. 882: 90. 1962; Paul, Sim, Hamor, & Robertson, Journ. Chem. Soc. 1962: 4133--4145. 1962; Wight, Icon. Pl. Indiae Orient., imp. 2, 4 [Cramer & Swan, Hist. Nat. Class. 31]: 12--13, pl. 1471--1473. 1963; Mold., Phytologia 61: 22--50. 1986.

CLERODENDRUM INERME (L.) Gaertn.

Additional bibliography: Mold., Phytologia 61: 23--25 & 30--50. 1986.

In Papua this species is described by Croft & Vines as a scrambling shrub at the water's edge in low altitude swamp forests in the river tidal zone. In Hong Kong it is said by Alexander (1971) to thrive "along seashores and on lowlands", Thrower (1971) reports it "restricted to coastal beaches...often associated with mangroves", and Taam refers to it as "a semi-woody climber to 5 feet fairly common but scattered in dry sandy soil".

In India, according to Naskar & Bakshu (1982), it grows in association with *Acanthus* sp., *Ceriops* sp., *Phoenix* sp., and *Rhizophora* sp. in "ridge forests" and Dagar & his associates (1978) report that it "regenerates from exposed roots in badly eroded habitats" in Madhya Pradesh. Rao & Sastry (1972) found it to be a constituent of the "middle mixed zone of the strand vegetation in western India", growing along with *Calotropis gigantea* R. Br., *Capparis decidua* (Forsk.) Edgw., *Senra incana* Cav., *Sericostoma pauciflorum* Stocks, and *Tamarix tropic* Fole. Navalkar (1961) found it growing in the 7th (most distant from the sea) stage of succession zone in the mangrove swamps of Salsette Island (Bombay), an area of increasing aridity and very little salinity. Puri (1960) found it in the third story of small trees and shrubs in northern Kanara; Prain (1891) found it comprising a part of a common sea-face jungle-fence inside of first and second beach forest lines at the edge of the Coco group of islands. Saldanha refers to it as a common undershrub in Mysore.

Sedgwick & Bell found *Clerodendrum inerme* growing in a region of 115 inches of annual rainfall in Bombay. In the same area Santapau

(on *Santapau 21320*) says of the plant: "a large shrub, the leaves remarkably small for the species, but the branches when grown in the University Compound give leaves of the normal size" -- his *no. 142.13H* was collected "at highwater limit". The plant is commonly used as a hedge in Bombay.

Arora & Aggarwal (1965), in writing of this species in India, describe it as occasional on the main strand -- thickets of this species follow *Acanthus ilicifolius* as most common on muddy banks -- found with *Derris uliginosa* and *Premna obtusifolia* in thickets of *Scaevola taccada* along river backwaters -- with *Premna* and *Calophyllum inophyllum* in very light gray soil without any clay -- with *Premna* and *Derris* it makes a dense cover above high tide mark and salt spray -- it occurs behind the *Ipomoea pes-caprae* zone or in association with *I. pes-caprae* in dull white soil. Prain (1963), writing of it in Bengal and the Sundribuns [Bangladesh], describes it as "A straggling, littoral shrub of muddy shores" -- in Chittagong he refers to it as "A bushy, littoral shrub of rocky shores on the seacoast". Sebastine & Ellis (1967) report it common in Madras near roads and pathways along with *Vitex negundo* and *Ficus benghalensis*. Rao and his associates (1963) describe it as a denizen of "inland sandy habitats interspersed among dominants" on the Krusadi Islands. Gausson and his associates (1964) refer to it as growing on "banks of salt swamp saline marshes and halophilous pseudosteppe".

In Indochina it is said by Squires to grow "in salty tide water" at Hue. Hartley and his associates (1973) describe it as a "Woody climber in scrub back of [the] ocean beach" at Huon Gulf, citing their *nos. 9741 & 11068*. Hu found it to be very common along rocky shores on Tamon Island (near Hong Kong).

Hallier (1918) reports finding *C. inerme* on Luzon Island in the Philippines, growing with *Ipomoea biloba* Forsk., *Canavalia* sp., *Erythrina* sp., *Pongamia glabra* Vent., *Caesalpinia nuga* Ait., *C. bonducella* Fleming, *Hibiscus tiliaceus* L., *Terminalia catappa* L., *Strophanthus* sp., etc. on the strand at Subic Bay. On Yap he found it growing on *Pandanus* steppe.

In New Guinea Gray & Floyd describe it as "scandent along river banks", while McKee calls it "a climber at the edge of mangrove swamps" and "straggling through mangrove trees to 15 feet tall", while Brass refers to it as a "large rambling shrub common in strand forests". Merrill tells us that it is a small shrub common throughout the Philippines in salt water swamps along the seacoast.

In the Pacific Oceanica region Fosberg found this plant abundant on dissected limestone, "an extensive vine-like shrub pendent over limestone cliffs" on Nauru Island; in the Marshall Islands he describes it as a low scrambling shrub forming low thickets generally throughout coconut groves, around abandoned taro pits, and in tangled masses up to 3 m. tall along the inner edge of beach scrub. On Dublin Island he encountered it on steep wooded slopes and ridges, partially cleared and cultivated below, near the lower edge of the forest, and on Pis Island he refers to it as "a scrambling shrub forming thickets in flat coral sand and rock substratum, mostly planted with coconuts, with a dense brushy understory toward the outer beach of *Scaevola* mixed with other shrubs, *Messerschmidia* fringing the wet

beach". Canfield refers to it on Peleliu Island as a common liana at the border of swamps in limestone soil, growing with *Acrostichum*, *Hibiscus tiliaceus* L., *Ipomoea*, and *Derris*; on Manauli Island Fosberg calls it "local on lagoon beach ridges in a mosaic of halophytic vegetation on low sand islands". Raulerson, on Pagan (in the Mariana Islands) calls it "a common sprawling shrub in strand vegetation but rare elsewhere."

Nierling, on Werua Island, encountered *C. inerme* in thickets in breadfruit-coconut plantations covering limestone rock and on coral rubble banks of *Cyrtosperma chamissonis* pits, locally abundant and profusely flowering. Fosberg & Evans, on Lamotrek Island, report it common in forests and the peaty edges of taro swamps in interior coconut-breadfruit plantings, and, on Krakatoa Island, only rare on flats of cinders and volcanic sand and ash at the base of cinder cones. Fosberg, Falanruw, & Sachet (1975) refer to it as a "common component of undergrowth in semi-shade" on Pagan and Sarigan Islands. St. John (1977) found it growing in volcanic soil, dry forests on ridges, and secondgrowth forests in the Tongan Islands. Hosaka refers to it as a constituent of the swamp forest association on Moen Island.

In the Gilbert Islands Moul describes *C. inerme* as "tending to be vinelike in habit in thickets of palms, *Guettarda*, and *Scaevola*. On Saipan it is said by Fosberg to be an abundant semi-scandent shrub forming large masses in swamps with *Acrostichum aureum*, *Hibiscus tiliaceus*, and a few large trees of *Casuarina equisetifolia*. In New Britain Croft & Katik found it colonizing the crests of pebble beach areas where the soil is sparse to non-existent, the leaf-litter sparse, and exposure is to sea spray. Evand reports it growing on coral platforms just above high tide on Guam, straggling through the branches of large *Barringtonia asiatica* trees. Long reports it common in *Artocarpus* plantations in the Central Pacific Islands [e.g., Hull Island. In the Gilbert Islands, according to Herbst & Allerton, the species is cultivated, being propagated by cuttings "because it sets few seeds" there.

Araujo reports it from Rio de Janeiro (Brazil), where it "formando pequenas moitas entre *Cyperaceae* na orla do mangue".

Collectors have encountered *Clerodendrum inerme* in flower and in fruit in every month of the year, and several authors also assert this as fact [e.g., Shah & al. (1971) in Gujarat]. Rao & Razi (1973) assert that it flowers and fruits throughout the major part of the year in Mysore; Patel (1968, 1971) says "almost throughout the year, but mostly from July to November" in Melghat and from July to October in Gujarat. Bor & Raizada (1954) also say "throughout the year, but chiefly July to November". Roxburgh (1874) asserts that in India it blooms "chiefly in the cold season"; Alexander (1971) found that in Hong Kong it blooms "in summer".

Mullan (1933) tells us that "*Clerodendron inerme*, Gaertn. is a straggling shrub which is often found along with the mangroves on the verge of high-water mark where its roots are washed by the rising tides. It thrives equally on wet or dry saline soil, as well as under mesophytic conditions. A plant was taken from the sea-shore and cultivated under mesophytic conditions for ten months. Figs. 184 and

185 are photographs (taken in the dry season) of the halophytic and mesophytic forms respectively. In the halophytic form the small, thick leaves arrange themselves on one side of the branch, thus assuming a profile position. In the mesophytic form, the leaves are broad and thin and, standing wide apart, present their full upper surface to the light." He proceeds to compare the anatomy of the leaves and stems of both forms. Among the many interesting facts which he presents is: "At the end of the monsoon, the old leaves get thick and succulent, being nearly thrice as thick as the functional leaves. Such leaves are pale yellow in colour and act mainly as water-reservoirs." The root cortex is "lacunar and resembles somewhat that of the mangroves.....As in *Acanthus ilicifolius*, the lacunar cortex seems to be a congenital structure, for it persists even in individuals which live in well-drained soil....In the mesophytic form, photosynthetic activity is more vigorous and the cortex is full of chloroplasts with included starch. The pith is not lignified throughout. In the leaf, the cuticle and the waxy coating are poorly developed and the glands are mostly devoid of contents. The lower epidermis, in surface view, is no longer composed of small cells with straight walls....but consists of large cells with irregular wavy walls....The lamina is thinner than that of the halophytic form...and the old leaves do not become thick and succulent."

Backer & Bakhuizen (1965) describe the species, in Java, as an erect, drooping, or straggling shrub, 0.5--10 m. tall, blooming throughout the year, and found "mainly in saltish localities near the sea; often numerous".

The Spence 435 collection from Truk Island is described by the collector as having been "a woody vine-like shrub, sometimes growing in shrub fashion, at other times climbing into the taller trees...the corolla-lobes pale pink near the base, wavy or undulate, differing from others seen in semi-shade to open sun" [this constitutes a voucher specimen for NIH grant NOI-CM-33747].

Taylor (1950) tells us that in the northern Marshall Islands this species is "a small shrub forming tangled thickets or more shapely scattered specimens, nearly leafless when first observed in March or only with leaves of the past season, rapidly forming new growth with the advent of the wet season and very conspicuous and attractive in July."

Although mostly described as a straggling shrub, some collectors actually describe this species as a "tree" [e.g., *Dissing* 2591, *Köie & Olsen* 1668 "5--10 m. tall"]; on *Kajewski* 2244 it is described as "a small tree to 5 m. tall"; *Stoddart* refers to it as a "tree 3 m. tall" on Manauli Island, but his no. 4441, from East Hope Island [Great Barrier Reef] had a "creeping habit" and his nos. 4507 & 4645, from Two and Three Isles, were "a creeping shrub". *Hosaka* refers to the plant as a "viney shrub" and it is definitely called a "vine" on *Christophersen & Hume* 2006, *Mueller-Dombois & Cooray* 6712107, *Robinson* 297, *Stone* 6240, and *Walker* 7578; *Brown* refers to it as a "honeysuckle-like shrub", and *Evans* as a "straggling shrub with branches many meters long"; on *Stone* 8686 it is called "a climber" and on *Fosberg & Balakrishnan* 53627, from Sri Lanka, "a sprawling

shrub". On *Whistler W.1882* it is said to have been "a high-climbing scandent shrub", while on *Liang 62947*, from Hainan, it was "scandent on shrubs in open thickets". *Streimann & Stone LAE.53607* bear a label describing the plant as "an epiphyte". In the Solomon Islands (on New Georgia Island) it is described by Maunu's as "a climber reaching 40 feet above ground in well-drained secondary forests"; on *Stephens 56* it is called a "woody vine 25--30 feet long"; on *Taam 1341* it is said to be "climbing to 5 feet"; on *Vanpruk 839* it is a "prostrate shrub 2 feet high, 5 feet long".

According to MacMillan (1943) in India and Sri Lanka the tree form is called "pinari", while the shrubby form is known as "wal-gurenda" -- the very distinct names implying that the two forms are recognized by the natives as being quite distinct and different.

Clerodendrum inerme is described as a "scrambling shrub" on *Bristol 2343* and *Yuncker 9733*; as a "scandent shrub" on *Bristol 1997 & 2383*, *Henty & Frodin NGF.27267*, *Lampureux 4867*, *Liang 62887*, *Smith 1187*, *Whistler W.1332*, and *Yuncker 9733*; and as a "sprawling herb" on *Forbes 54986* and *Fosberg & Balakrishnan 53627*. In Guam it is reported on *Moran 4550* to be "scrambling 2 m. shrub forming thickets". In the Fiji Islands *Degener & Ondonez 14191* was taken from a "tree 5 m. tall", but *Degener 14958* was a "shrubby creeper sprawling over rocks in an isolated dry forested ravine"; in the Samoan Islands *Yuncker 9096* is said to have been "scrambling over shrubs in thickets" while on Niue Island *Yuncker 10042 & 10218* were taken from a "trailing shrub on sea cliffs". In Queensland *Flecker 988* was taken from a "tree about 10 feet tall in a swamp". In West Irian *Pleyte 364* is described as from a "liana 28 m. long, 3 cm. in diameter, growing in open spots on the seabeach"; in Papua Brass refers to the plant as a scrambling shrub at the inner edge of the mangroves; Garber, on Tau Island, definitely refers to it as a "tree or vine"; Smith, in the Fiji Islands, calls it a scandent shrub 2 m. tall. In the Mariana Islands Falanruw refers to it as having "long bending branches tangled through *Ficus* trees below a semi-open canopy"; on *Bryan 338* it is called "a woody climber in trees, 4--5 m. tall, on sea beach". In the Tongan Islands Yuncker calls it a "large liana with many pendent branches climbing in the trees of the strand forest" and "common in the sandy-calcareous soil of beach thickets [on Tongatapu] and "a trailing or scrambling shrub in thickets just back of the sea [on Nomuka], or "a somewhat scrambling shrub on coastal cliffs" [on Lifuka], and "sprawling over shrubs at 10--20 m. altitude" [on Eua]. Blatter, in Bombay, found it growing "within 10 yards of high tide".

In addition to the apparent great variability of this species as to habit and habitat, there is a similar variability in the morphologic character of the foliage. On *Bristol 1997* the leaves are unusually large, on *Moldenke & al. 28119* the blades are uniformly thick in texture (when fresh) and apically distinctly pointed. Shivarajan, on the label of his unnumbered collection of 10-12-74, says: "leaves invariably acuminate as in this specimen. Possibly might be a different variety." On *Mueller-Dombois 68042002* the blades are oblong-orbicular, light-green, and quite thickish in texture. On *Hu 12065* the collector notes that the corolla-tube is "only 2 cm. long".

Trimen (1895) comments about *Clerodendrum inerme* in Sri Lanka: "The foliage has a peculiar fetid but rather aromatic odour when bruised, and a hot taste: and the vernacular names are the same [here] as for *Celtis cinnamomea*, the scent of which is very much more offensive."

Burkill (1935) describes *C. inerme* in the Malay Peninsula as "An untidy sea-shore shrub, with somewhat soft greenish-brown or black fruit (from which it gets the first part of its [native] names tèrong jambul and limau lèlang), found from Bombay to the Pacific; in the [Malay] Peninsula it is round the coasts".

Smith (on his *no. 9506*) describes the filaments and style as "nearly white proximally, rich blue distally" and the anthers as yellow.

The chromosome number is given as 23 haploid, 46 diploid by Raman & Kesavan (1963), Sharma & Mukhopadhyay (1963), and Cave (1964), but as 48 ("a tetraploid species") by Sobti & Singh (1961).

Nieuwenhuis (1907) describes and illustrates the nectaries found on the leaves and calyxes. Malaviya (1965) reports finding spheroidal sclerids formed by the conversion of the collenchyma cells of the cortex.

Inamdar & Patel (1969) discuss in detail the anatomy of the petiole and lamina and found that in the petiole and midrib the vascular bundles are arranged in a ring and the phloem does not form a continuous arc. The smaller vascular bundles originate from vascular meristems with delayed differentiation. The accessory vascular bundles in each wing of the petiole originate either from a single strand or fusion of 2 separate strands. Lignified or unlignified bundle caps which are primary phloem fibers are present in all the vascular bundles, the latter being of varying size. The vascular cambium with its characteristic radial alignment of cells is present between the xylem and phloem.

Shah (1968) and his associates (1969) studied the nodal anatomy and report that "the compound single trace is formed by the fusion of 2--3 bundles.... Before entering the leaf, the fusion of 2 bundles in *C. inerme* occurs at a lower level in the node as compared with that in *C. splendens*. All unilocular nodes do not appear to be homologous."

It should be noted here, for the record, that the Sri Lankan Cooray 69092807R, Mueller-Dombois 68042002, Wirawan 1114, and Wirawan & Balakrishnan 951 are voucher collections for ecologic studies and Carroll 27 & 84 are vouchers for ethnobotanic studies; Yates 936, from Sumatra, is accompanied by an in situ photograph of the collection site.

The corollas of *C. inerme* are mostly described by authors and collectors as "white", as, for instance, by Dunn & Tutcher (1912) and by Shah & al. (1971) and on *Amaratunga* 332 & 1890, *Bristol* 1997, 2343, & 2383, *Fosberg* 54997, *Fosberg & al.* 50907, 53455, & 53627, *Hu* 11970, 12065, & 12159, *Kraemer* 244, *Larsen & al.* 1216, *Ledermann* 14088, *Mac Daniels* 2152, *Nafday* 124, *Peekel* 571, *Rechinger* 4936, *Saldanha* 15340, *Santos* 4333, *Schmidt* 321 & 552d, *Sohmer & al.* 8869, *Stoddart* 4019, 4237, 4441, & 4890, *Taam* 1341, *Weber* 26, and *Wirawan* 1114, but they

are described as "off-white" on *Grupe 120*, "greenish-white" on *Eames 1*, "white with a hint of purple" on *Long 3487*, "white, tinged with pink" on *Hosaka 2870* and *Steere 123*, "white touched purple" on *Young s.n.* [FHB.39192], "whitish" on *Wilson 9867*, "white and purple" on *Stoddart 4806 & 5077*, "white & lilac" on *Robinson 297*, "white-violet" on *Waalke 665*, "white with purple center" on *Stoddart 1553*, "white tipped with red" by MacMillan (1941), "white with light purple tinge" on *Christophersen & Hume 2006*, "white, externally somewhat purple" by Mueller (1868), "tube greenish-white, lobes white" on *Lam 2683*, "creamy" on *Cummings s.n.*, "cream tinged with mauve" on *Brass 853*, "slightly purplish along margins of corolla-lobes" on *Royen 3355*, "pale-pink" on *Waas 732*, "pink" on *Glassman 2464*, "yellow" on *Moszkowski 466*, and "liliaceous" on *Pleyte 160*.

Keys to distinguish *C. inerme* from other Indian species will be found under *C. griffithianum* C. B. Clarke (60: 134--136), from other Bengal and Dehra Dun species under *C. indicum* (L.) Kuntze (61: other Indochinese species under *C. hahnianum* Dop (60: 141--143), other Taiwanese species under *C. intermedium* Cham., other Madagascar species under *C. baronianum* Oliv. (58: 184--190), and other Chinese species under *C. canescens* Wall. (58: 416) and *C. henryi* P'ei (60: 180--181). Some other keys that may prove helpful are the following (all with modifications to bring them up-to-date, but, in some cases, a distinction being left between what the original author regarded as "true" *C. inerme* and some of its edaphic forms).

Henderson (1974) separates the Malayan species known to him as follows:

1. Inflorescences short and few-flowered; plant of tidal mud.....
C. inerme.

1a. Inflorescences large and branched, with many flowers; not in tidal mud.

2. Inflorescences pendent; corolla white.....*C. nutans*.

2a. Inflorescences erect, pyramidal; corollas red and yellow.....
C. phyllomega var. *myrmecophilum*.

Fletcher (1938) keys out the Thailand taxa known to him as follows:

1. Corolla hypocrateriform, the tube less than 5 cm. long. Subgenus *Euclerodendron* C. B. Clarke.

2. Cymes axillary or in terminal leafy panicles, the lower ramifications being axillary.

3. Cymes axillary.

4. Cymes few-flowered from most axils; calyx-teeth very short.

5. Leaf-blades elliptic to lanceolate; calyx externally only faintly glandular.....*C. nerifolium*.

5a. Leaf-blades ovate to elliptic; calyx externally markedly glandular.....*C. inerme*.

4a. Cymes in deflexed, pedunculate, close panicles from the upper leaf-axils; calyx-lobes linear-lanceolate.*C. deflexum*.

3a. Cymes in terminal leafy panicles, the lower ramifications being axillary

6. Calyx-lobes ventrally glabrous.

7. Leaf-blades elliptic, glabrous above or occasionally with a slight pubescence on the venation....*C. disparifolium*.

7a. Leaf-blades oblong to obovate, thinly covered with jointed

- hairs above.....*C. lankawiense*.
- 6a. Calyx-lobes ventrally markedly pubescent.
8. Leaf-blades markedly pubescent above with jointed hairs; corolla-tube at most 2.5 cm. long.....*C. lloydianum*.
- 8a. Leaf-blades slightly pubescent above with short hairs; corolla-tube at least 2.5 cm. long.....*C. garrettianum*.
- 2a. Cymes in definite terminal panicles.
9. Panicle more or less nutant or pendulous.
10. Leaf-blades glabrous above, occasional only very faintly pubescent along the midrib.
11. Leaf-blades at most 6 cm. wide, basally slightly tapering; calyx-lobes lanceolate.....*C. nutans*.
- 11a. Leaf-blades at least 6 cm. wide, rounded, basally sometimes slightly attenuate; calyx-lobes ovate and apically cuspidate.....*C. umbratile*.
- 10a. Leaf-blades decidedly pubescent beneath, basally subdeltoïd or lobate.....*C. schmidtii*.
- 9a. Panicles erect.
12. Panicles elongate or pyramidal.
13. Panicles elongate.
14. Main rachis-ramifications to the cymes 0.5--1 cm. long; calyx-teeth at least 1 mm. long; leaf-blades marginally very deeply serrate.....*C. vanprukii*.
- 14a. Main rachis-ramifications to the cymes 1.5--5.5 cm. long; calyx often truncate, the teeth at most 0.75 mm. long; leaf-blades marginally only distantly serrate or denticulate.
15. Leaves and bracts opposite; petioles at least 2 cm. long; leaf-blades marginally mostly subentire; inflorescence at most 15 cm. long
16. Leaf-blades glabrous on both surfaces...*C. venosum*.
- 16a. Leaf-blades strongly pubescent on the midrib and secondaries above and on all the venation beneath.
C. venosum var. *pubescens*.
- 15a. Leaves often ternate and the bracts generally so; leaves sessile or short-petiolate.
17. Leaves sessile, the blades basally cuneate.....
C. serratum.
- 17a. Leaves generally petiolate, but sometimes only slightly so when the leaf-blades are basally decurrent and acuminate narrowed.....
C. serratum var. *wallichii*.
- 13a. Panicles pyramidal.
18. Leaf-blades conspicuously lobed.....*C. paniculatum*.
- 18a. Leaf-blades unlobed.
19. Leaf-blades marginally entire; calyx lobes extending little more than halfway to the calyx base.....
C. villosum.
- 19a. Leaf-blades often marginally dentate; calyx-lobes extending almost to the calyx base.....*C. viscosum*.
- 12a. Panicle corymbose or subcapitate.

20. Panicles corymbose; calyx-teeth small, at most 1 mm. long.....*C. colebrokianum*.
- 20a. Panicles subcapitate; calyx-lobes large, at least 8 mm. long.
21. Corolla-tube at least 3 cm. long; calyx-lobes triangular-lanceolate, at least 10 mm. long; corolla single.....*C. lasiocephalum*.
- 21a. Corolla-tube at most 2 cm. long; calyx-lobes triangular, apically acuminate, at most 10 mm. long; corolla "doubled".....*C. philippinum* f. *multiplex*.
- 1a. Corolla infundicular, the tube more than 5 cm. long. Subgenus *Siphonanthus* (L.) C. B. Clarke; leaves usually verticillate.....
C. indicum.

Cooke (1905) distinguishes the Bombay taxa as follows:

1. Cymes few-flowered, axillary, distinct.....*C. inerme*.
- 1a. Cymes collectively forming a terminal panicle.
2. Calyx not conspicuously enlarged in fruit.
3. Calyx-lobes long, ovate, acuminate; leaves opposite, less than 3 inches long.....*C. phlomidis*.
- 3a. Calyx-lobes very short, broadly triangular; leaves often ternate, to over 6 inches long.....*C. serratum*.
- 2a. Calyx much enlarged in fruit, turning red.....*C. villosum*

Maheshwari (1963) distinguishes the Delhi species as follows:

1. Corolla-tube less than 5 cm. long.
2. Corolla white, rarely pink; cymes axillary and terminal.
3. Leaf-blades ovate, elliptic, or oblong, subfleshy; flowers in axillary mostly 3-flowered cymes.....*C. inerme*.
- 3a. Leaf-blades ovate or rhomboid, thin-textures; flowers in dichotomous cymes forming a rounded panicle.....*C. phlomidis*.
- 2a. Corolla not white; cymes only terminal.
4. Habit erect; corolla pink, doubled.*C. philippinum* f. *multiplex*
- 4a. Habit climbing; corolla crimson, single.....*C. splendens*.
- 1a. Corolla-tube more than 5 cm. long.....*C. indicum*.

Blatter and his associates (1935) key the Indian medicinal species as follows:

1. Corolla-tube less than 3.8 cm. long.
2. Peduncles mainly axillary.
3. Leaf-blades obovate or elliptic, subobtusate, entire, glabrate..
C. inerme.
- 3a. Leaf-blades ovate, sinuate or serrate, puberulent or pubescent beneath when mature.....*C. phlomidis*.
- 2a. Peduncles terminal.
4. Inflorescence paniculate, elongate, conspicuously bracteose...
C. serratum.
- 4a. Inflorescence capitate or corymbose.....*C. viscosum*.
- 1a. Corolla-tube more than 7.5 cm. long.....*C. indicum*.

The pollen of *Clerodendrum inerme* is described by Nair & Rehman (1962) as spheroidal, diameter 63 μ , range 56--58 μ , apocolpium diameter 35 μ , based on *Indian Nat. Bot. Gard.* 44116, slide 2631, from Bombay. Huang (1972) describes the grains as oblate to subpro-

late, 42--67 mu x 56--71 mu, based on Huang 3342 from Taiwan.

Maiti (1968) reports the presence of a green oil, a sterol, and much saponin in *C. inerme*, but a negligible amount of alkaloid and no terpene.

Hafaz & Younis (1969) found experimentally no change occurring in stomatal opening response in carbon dioxide free air. Bose and his associates (1977) found significant promotion of rooting with use of ethylene and acetylene.

Wehmer (1931) reports the extraction of chirettin (chiratin) and ophelic acid from the leaves, while Al-Rawi & Chakraverty (1964) report that the fresh leaves contain an amorphous bitter principle and the ash contains sodium chloride. Abdul-Alim (1971) isolated from the leaves a water-soluble bitter principle with alkaloid attributes, as well as a sterol, an aliphatic alcohol and ketone, also glucose, fructose, and sucrose as free sugars.

Subramanian & Nair (1972) report the presence of a unique flavonoid, scutellarein-4'-L-arabinoside, in the leaves of this plant, claimed to be "the only scutellarein pentoside so far known. The presence of high proportions of free scutellarein with small quantities of its glycoside in *C. nerifolium* is unusual in *Tubiflorae* and may be due to the easy hydrolysibility of scutellarein-4'-arabinoside....Luteolin and apigenin which have been recorded to be common flavones of *Verbenaceae* are absent in *C. nerifolium*." This same researcher and his associates (1973) have found the sterol, (24S)-ethylcholesta-5, 22, 25-triene-3 β -ol, in the leaves, based on their no. 11/71 deposited in the Jipmar Herbarium at Pondicherry.

Common and vernacular names recorded for this widespread plant are understandably very numerous, including: "abuts", "aihua", "añg-angri"; "a-la-loi-alugi", "aloalo-atai", "alo alo itai", "alo alo tai", "aloalo tai", "aloalotai" [=seaside *Premna*], "amahoesoe", "anjali", "apuech", "apuoch", "apwec", "ara", "aria", "ariya", "arni", "aupui", "awai", "ayer putri", "baliscug", "baliseng", "baliskug", "ban-jai", "bán-jai", "banjai", "banjoi", "banjuen", "ban-juen", "ban-jumet", "barga", "bat-raj", "batraj", "ben juen", "biring djéné", "boerende", "bonjoi", "bon-joí", "bunga pawang" [=sorcerer's flower], "bunjoin", "bun-join", "bunjumat". "bun-jumat", "burenda", "burende", "busel-busel", "chamvert", "choti-arni", "chia bam", "chirettakraut"; "cholora", "chong gong", "choti-arni", "ch'ou-k'u-lang", "clerodendro do cagillas", "Coromandel chlerodendrum", "dariai arni", "didi leman"; "di hia", "dungeti", "embreret", "embrert", "eru-pichcha", "eru-pichecha", "erupucha", "eru puchcha", "etin", "etipisangi", "eti pisinika", "etipisinika", "etiu", "fa long shue", "false jasmine", "foo long", "foo long shue", "foo yis hai", "fouksha", "fuefuesina", "gabwi", "gambir-lant", "gambit-laut", "gambir laoet", "gamwert", "garden quinine", "gashangi", "geki", "genguti", "ghuraenda", "girila-mari", "glory-bower", "glorybower", "goo yis hai", "gowie", "gulinda", "habiya", "habui", "habwi", "ibanjoi", "ibota-kusagi" [= *Ligustrum* clerodendrum], "ibotakusagi kunin", "ihlau", "ilau", "ilaw", "Indian privet", "isamdharí", "isandhari", "isandhári", "kakoli", "karamoto", "kawak", "kellel-lap-ni", "kam bang boegang", "këmbang boegang", "këmbang lugang", "këmbanq-luqanq", "këmbanq lygang", "ketoewèr", "ketoewér", "khó'nâ-pôa", "koi a koi", "koivel", "koiya",

"koli", "koyanal", "†shudrágnimantha", "k'u-lüŋ-shu", "kudah", "kundali", "kywe-yan-nge", "kywe-yan-ngè", "la bul mago", "lagoendi", "lagoendi alas", "lahan-khari-narvel", "lahán-khári-narvel", "lan-jai", "lanjai", "lán-jai", "lapalapa", "laruch", "leruc", "limau lǎlang", "lodagao", "lodegau", "lodigao", "lodogao", "lodugan", "lodugao", "lodúgao", "lodugau", "l'ruch", "ludugao", "ludugao vaca", "mañgongot", "mañgotngot", "manka-hogi", "manka-hôgi", "manoeroe dowongi", "manor oetan", "manumara", "manummala", "melati air", "mĕlāti oetan", "mĕlāti utan", "naitakkile", "naitokkili", "nalla-kupi", "nayitakkali", "niir-notsjil", "niir-notsjil", "nillavuppi", "nirnochi", "nir notsjil", "nir-notsjil", "nir-notsjit", "oleander-leaved clerodendrum", "oviedo flor blanca", "parian-salojon", "parian solojon", "pawan", "pĕh-hoe-kho'-na-pôa", "penni ka", "pinari" [growing as a tree, in India & Sri Lanka], "pinarichangu", "pinarichanganguppi", "píná-shengam-kuppi", "pinchil", "pinchul", "pin laf kyok pán", "pinie-kyauk-pan", "pinley-kyong-ben", "pinyin", "piran", "pirolaikyou", "pirolai kyont", "pisangi", "písangi", "pishinika", "pishmika", "pisingha", "pisíngha", "pisinika", "pua", "pucherik", "pumb-arg-aru", "qesmat aghaji", "samin-anga", "saminanga", "samudrayuthika", "sān fú mún", "sanfu-mun", "sangam", "sangam-kupi", "sangamkuppi", "sanganuppi", "sangkupi", "sang-kupi", "sang-kúpi", "sang-kupi", "sarupparachi", "seashore glorybower", "seashore tube-flower", "seaside clerodendron", "shangam-kupi", "shangam-kuppi", "shen-gan-kupi", "shen gankuppi", "shengan-kuppi", "shen-gankuppi", "shengankuppi", "shoalo tai", "shui-hu-man", "shuǐ hú mǎn", "smooth clerodendron", "snagkupi", "sómbah", "sorcerer's flower", "sund", "tabang-oŋgong", "tabangongong", "takkolakamu", "takkolamu", "tak-kólapu-chettu", "takko-lakamu", "tapval", "tapvan", "tatkarí", "taw-kyauŋban", "tehiya", "te inato", "te inoto", "tĕrong gambul", "terong jambul", "tihia", "ti natu", "tituhina", "tivar" [applied also to many other coastal plants], "toelang", "ttkari", "tulang-tulang" [=like bones, from its twiggy appearance], "tutuhina", "ula", "úla", "ulej", "ulig", "ulij", "ulo", "umbreret", "unarmed clerodendrum", "unbewehrter Losbaum", "uti", "utichetta", "úti chettu", "utichettu", "valayati mendi", "vana-jai", "vanajai", "vanajoi", "vanayuthika", "vanjai", "vere", "verevere" [=tangled, applied also to *Colubrina asiatica*, *Smythea pacifica*, *Tetrastigma vitiensis*, and *Ventilago vitiensis*], "vilayti-mendhi", "vishmadhari gida", "volcameria", "volkameria sans épines", "volkamier de Commerson", "volkamier sans épines", "wael-boo-raenda", "wael-bu-raenda", "wal-burenda", "wale-puti-lohaha" [=white strand cord], "wal-gooranda", "walguranda", "wal-gu-renda", "wal-gurenda" [growing as a shrub, in India and Sri Lanka], "wal-gúraŋda", "wal-gurenda", "wild jasmine", "wiliŋ", "willow-leaved clerodendrum", "wiri salo", "woel-bu-roenda", "wules", "wulech", "yasamin zafer", "zingi", and "ziyakara'ppu". Sasaki (1928) lists six vernacular names in Japanese characters; Tingle (1967) supplies another in Japanese; and Santapau (1953) supplies two names in Hindi characters.

Clerodendrum inerme is widely used in native pharmacy and medicine and has numerous other uses. Starting with the medicinal uses, the following reports are arranged more or less geographically and

chronologically -- the undated references, as usual, are taken from herbarium specimens.

Kosteletzky (1834) notes that "Die stark riechende, bittere Wurzel, so wie die nicht minder stark riechenden, bitterlich-scharfen Blätter werden als alterirende Mittel gegen Scropheln und syphilitische Krankheiten gebraucht; die Wurzel und die Früchte sind auch als Gegenmittel nach dem Genuss schädliche Fische bekannt."

Altschul (1973) asserts that when a man has trouble with his eyes, including blindness, the leaves of this plant are placed in hot water in a dish and a calico sheet is thrown over the head and dish, allowing the fumes to reach the eyes.

Abdul-Alim (1971) lists it as a medicinal plant in Egypt. Al-Rawi & Chakravarty (1964) report the species cultivated in Iraq and the leaves used there as an alterative and febrifuge.

Watt (1889) says: "A large, ramous, often scandent evergreen shrub, common in tidal forests in Bengal, Burma, and the Andamans... An exquisite perfume is said to be derived from the flowers of this plant....Dr. Dymock says that the plant has a reputation as a febrifuge in remittent and intermittent fevers. This fact is supported by Dr. Sakharam Arjun, who, upon the authority of Dr. Hojel, states that 'the thick succulent leaves are very bitter, and on expression yield a large quantity of thickish mucilaginous juice, with a slightly saline but intensely bitter taste. Although not generally known, it has of late been used as a febrifuge and antiperiodic with marked benefit.'"

Dymock and his associates (1893) discuss in detail the chemical composition of the leaves. They note, among many other medicinal and pharmaceutical tidbits, that "The dried leaves have been found to be quite as efficient as the juice of the fresh plant; they should be dried in the shade to preserve their aroma, and may be administered in decoction with aromatics, or powdered and made into pills. A tincture has also been found to be an efficient preparation." They report, further, that "This is a shrub the medicinal properties of which are widely known in the East. Some identify it with the Kshudrāgnimantha of the Rāja Nirghanta. It is the Gambir-laut of Java, the Woel-bu-roenda of Ceylon, and the Sanfu-mun of Cochīn-China. Ainslie says the juice of the leaves and root is considered alterative in scrofulous and venereal affections, the dose being a tablespoonful with or without a little castor oil. Rheede speaks of the use of the dried leaves for the same purpose, and of a poultice of the leaves to resolve buboes; he also says a bath prepared with them is used in mania, while the root boiled in oil affords a liniment useful in rheumatism. *C. inerme* is the Jasminum litoreum and Pharmacium litoreum of Rumphius (Lib. vii. cap. 47), who says the Amboinan name is Wale-puti-lohaha, which means 'white strand cord'. The Malays and Macassars administer the berries or the root to people poisoned by eating unwholesome fish; the leaves smeared with oil are heated over the fire and applied to recent wounds; they are also one of the leaves used for preparing the green rice of the Malays; he concludes by saying 'larga ac fausta natura in cunctis fere litoribus hanc obviam profert plantam'. In Bombay the plant has a great repu-

tation as a febrifuge; the juice of the leaves is used in doses of half an ounce. It is mucilaginous, very bitter, somewhat saline, and with a fragrant, apple-like odour. The medicinal properties of *C. inermis* closely resemble those of *Chiretta*."

Woodrow (1910) says much the same, namely that this plant "Is well known on eastern shores from its medicinal properties, which (Pharm. Ind., III., 77) resemble those of *Chiretta*; the dried leaves in infusion and tincture, and the juice of the fresh plant in $\frac{1}{2}$ oz. doses, have a reputation as febrifuge and alterative in scrofulous and allied affections." In his 1889 work he notes that "The leaves are valued as a febrifuge and the plant assumes a neat habit when pruned occasionally".

Kirtikar & Basu (1918) and Nadkarni (1927) also report that the roots, boiled in oil, are applied in a liniment to treat rheumatism. A tincture or decoction of the leaves is used to treat both intermittent and remittent fevers and as a general substitute for quinine. Blatter and his associates (1935) repeat all the above information virtually verbatim. Sastri (1950) also repeats much of the same information, adding, however, that the *Chiretta* referred to is *Swertia chiriyita* Buch.-Ham. and that the amorphous bitter principle in the leaves is accompanied by a resin, a gum "and a brown colouring matter. Steam distillation yields a stearopten-like body having the fruity odour of the fresh plant. The other extract is fragrant. The ash of the leaves is rich in sodium chloride." Dastur (1952) repeats much the same information regarding the plant's use as an alterative, febrifuge, and in the treatment of venereal and scrofulous diseases, recent wounds, buboes, mania, itches, and rheumatism. Bor & Raizada (1954) add that a tonic is made from the wood, roots, and leaves. Pattnaik (1956) says that it is used as a febrifuge in Orissa, where it blossoms from December to April.

Patel (1971) asserts that the plant is cultivated for hedges in Gujarat, where the juice of the fresh leaves is, again, used as an alterative in treating venereal diseases; in his 1963 work he refers to the plant as a "very hardy and quick growing shrub very suitable for hedges". Bhalla and his associates (1982) confirms its use in treating scrofulous and venereal diseases. Trimen (1895) states "I do not know that it is used in native medicine here [Sri Lanka], but in India the plant is much esteemed as an alterative and tonic." Hu (1981) tells us that it is readily procurable in the medicinal herb markets in China under the name "Ramus Clerodendri Inermis"; Walden & Hu (1984) repeat that it is used medicinally in China. In Hainan Lau asserts that its leaves in boiling water are used to wash boils.

Alexander (1971) avers that in Hong Kong "Local herbalists use its stems and leaves in the treatment of malaria and skin diseases". On Okinawa Sonohara and his associates (1952) report the use of its wood as fuel.

Burkill (1935) informs us that the plant is not used by the Malays, but is regarded as medicinal in Celebes, the Philippines, and Guam. Rumpf (1747) avers that the sailors of Macassar (Celebes) always took its fruits and roots to sea with them, the seeds being considered the more useful because a decoction made from the pounded seeds was used

when the "stomach had been upset by eating poisonous fish, crabs, &c." He also claims that the leaves, if eaten with rice, will increase the appetite.

Guerrero (1921, 1929) reports that the decocted roots are used in the Philippines as a febrifuge and general alterative, while a poultice made from the leaves serves as a resolvent. Quisumbing (1951) summarizes as follows: "the bitter principle of the leaves is entirely removed by ether, and subsequent treatment by alcohol and water affords extracts which are free from any bitterness. In its dual nature, this bitter principal shows a very remarkable resemblance to that found in *Chiretta* (*Swertia chirata*), a gentianaceous plant" and that the ash contains 24.01 percent of sodium chloride.

Miquel (1867) reports that the fruits were in his day sent from Celebes to Java for use as a medicine against dysentery. Safford (1905) reports that "The wood, the root, and the leaves are bitter, and are used by the natives of Guam, the Philippines, and Samoa as a remedy for intermittent fevers. The leaves, made into poultices, applied to swellings, prevent suppuration." He notes that the narrower-leaved "species or variety,.....*Clerodendrum nereifolium* Wall." is preferred by the natives over the broader-leaved plant."

Parham (1943) reports that in the Fiji Islands the natives consider this a very useful plant medicinally and use a tea made from the leaves when suffering from severe internal pains. Yuncker (1943) asserts that the plant is used in the preparation of native medicines on Niue Island. Pételot (1953) claims that in central Vietnam "les feuilles grillées puis bouillies servant à faire une boisson pour combattre le bérubéri."

Stone (1970) avers that in Guam "The leaves are used as a poultice to prevent swelling after bruises. The roots, etc. are bitter and may still be in use as a treatment for fever." Weiner (1971) reports that the leaves are used also in Samoa in treating fevers, while in Tonga an infusion of the pounded leaves is drunk as a remedy for liver disorders and in treating ulcers. Also in Samoa, it is reported by Zepernick (1972) that "Gegen Blutbrechen zerstöszt man zusammen die Blätter der *Erythrina variegata* var. *orientalis* und des *Clerodendrum inerme*. Laut Rezept 'reibe damit ein'.....Häufige Symptome und allgemeine Krankheitsbehandlung...Man bereitet eine Abkochung aus Blättern des *Clerodendrum inerme*". Duke & Ayensu (1985) tell us that both in Guam and Samoa the plant is used in the treatment of fever, headache, hematemesis, pneumonia, stomach ache, and wounds. Elsewhere it is used for seafood poisoning, blindness, buboes, ophthalmia, and rheumatism. In India it is suggested for scrofula, venereal diseases, fever, and mania. The oil from the root is used for rheumatism. In the Solomon Islands fumes from steaming leaves are used to treat eye ailments, including blindness. They assert that the leaves are a depurative, a wash for skin diseases, and in decoction for beri-beri, "and the seeds are antidote to poisonous fish, crabs, etc." This is a fair summation of most of the previously quoted literature.

Alkire reports that in the Caroline Islands the stems are used in the construction of native fish traps, the flowers are used in gar-

lands, and the juice forms an ingredient of "some medicines". St. John & Smith (1971) found the leaves actually used as food on Futuna Island. Evans reports that on Guam *Clerodendrum inerme* is used in combination with acangoang, gasoso, and amot tumaga as a fever cure. On the same island Safford & Seale report that "all parts [are] used medicinally".

Walker & Tawada inform us that on Iriomote Island the plant is a semi-vinelike shrub growing 5--6 feet tall and is planted as wave protection along the seashores.

Salomon & George found that on Ponape Island [in the Carolines] a local native medicine is made from this species and used to "stop babies from urinating too often in their sleep". On the same island, according to Fosberg, a perfume is made from the flowers -- he also reports that on Rota Island it is used medicinally to treat backache, while on Peliliu it is used as a fish-poison (as well as a medicine). Hosaka found it used medicinally on Saipan.

On Sonsorel Island, in the Carolines, according to Berry, "When a person has a fall from a tree or while working, the leaves of this plant can be pounded, squeezed into a cup, and the juice drunk. This will help to settle the stomach after the fall and make waste disposal normal. The leaves are also pounded, mixed with coconut oil and spread on a mat for the injured person to lie on. This medicine is used every day after the fall until he is better. Both the stomach medicine and the vomit medicine naatu are used after a fall, either one may be used first, but the first medicine is used only on the day of the fall."

In addition to the many medicinal uses listed above, *Clerodendrum inerme* has numerous other uses. Maheshwari (1963) says that it is "Commonly cultivated as [a] hedge plant along foot-paths in lawns [in Delhi, India]. [It is] Also grown as a trailing shrub to cover the stony circles and dirty areas of gardens. The leaves are considerably variable in size depending upon the habitat," and it flowers there from July to November. Navalkar (1956) also reports it being planted as hedges "and along the margins of streams". Chopra and his associates (1965) say that hedges made of this plant are "common all over India...its thick succulent leaves are very bitter and the hedge is [therefore] safe from [browsing] animals". Bose (1965) adds that the hedges so formed are "compact and clean", flowering "during the rains". Badhwar & Fernandez (1968) report that it is a "choice hedge plant" in the Himalayas. Sharma (1975) and Babu (1977) report that it is "sometimes cultivated as a hedge" in the Punjab and in Dehra Dun. Lord (1978) found it so used at Brisbane, Australia. Varma (1981) insists that it "makes a very fine hedge". Maheshwari & Singh (1965) and Stewart (1961, 1971) also speak of its ornamental use in gardens in the Punjab, in Sind, and at Rawalpindi (Pakistan).

Bailey (1935) lists only Taihoku as a source supplying this species to the horticultural trade.

On Yap Island, according to Cushing & Mitag, the flowers are used in make into garlands; in the Gilbert Islands they are used to make wreaths.

This species is listed as "one of the main sand-stabilizing plants of the deserts and semi-deserts of the world", a fact which probably

accounts for its introduction in places like Brazil, Egypt, Florida, Guam, Hawaii, Iraq, Jamaica, Martinique, Mauritius, Reunion, Saudi Arabia, South Africa, and Zaire.

Graf (1963) illustrates the use of this species in topiary art, showing an "elephant" and a "dinosaur" made of it in the Feroze Mehta Hanging Gardens in Bombay, trained over wire frames, sheared every 2 weeks, and introduced from the mangrove areas nearby.

Petrov (1971) also speaks of its value as a sand-stabilizing plant. Rao and his associates (1963) report that it is employed with *Vitex negundo*, *Cyperus stoloniferus*, and *Sporobolus maderaspatanus* to stabilize the sand-dunes on Ramaswaram Island, India. Parker (1924) refers to it as "A very hardy and quick-growing shrub which might perhaps be useful for afforestation work". Garber, on Tau Island, found its wood used for making the crown crosspieces of mosquito tapa tents.

Sharaf and his associates (1969) isolated from its leaves a bitter principle soluble in water and showed that both it and an alcoholic leaf extract have ecobolic, hypertensive, and laxative properties. Also that "A sterol was isolated as crystals from the unsaponified fraction, and 6 alkaloidal components were isolated by chromatography. The sterol appeared to have no oestrogenic, androgenic, or gonadotrophic effects." Norton and his associates (1973) found that the leaf extracts had some inhibitory effects on *Nocardia in vitro* and produced some hypertension in rats, and therefore are "worthy of further study" pharmaceutically.

In regard to pests and parasites of *Clerodendrum inerme*, Leeuwen-Reijnvaan (1911) lists and illustrates various leaf- and stem-galls produced by cecidomyid gall-midges on this plant. Yamamoto (1936) found the fungus, *Cercospora kashotoensis* Yamamoto, infesting the leaves. Hansford (1961) reports the fungus, *Meliola cookeana* var. *viticis* Hansf. attacking it in Java, citing "BO 4661". Mani (1965) describes another cecidomyid gall-midge forming pyriform swellings on the tender shoots, citing his gall no. 253.

Kalani (1966) reports the ascomycete fungus, *Tryblidiella rufula*, attacking this plant; Tilak & Kale (1969) found another ascomycete, *Ophionectria clerodendri* Tilak & Kale on its dead stems in India. Venkatareddi (1969) tells us that the plant is "rarely" parasitized by the dodder, *Cuscuta reflexa* Roxb., in Indian gardens.

Pande & Yadava (1975) record the mite, *Tetranychus macfarlanei*, as a pest on this plant in the semi-arid regions of Rajasthan, India, causing the plants to become stunted in growth or even to dry up completely. Singhal, Vats, & Singh (1976) report that leaf damage may be caused by the grasshopper, *Poecilocerus pictus*, in India. Valentine found on Viti Levu (in the Fiji Islands) that the plant may often be infested by large brilliant bugs, particularly on the fruits, and by some nitidulids on the flowers.

The rather involved nomenclature and taxonomy of *C. inerme* may be summarized as follows. In the Linnean Herbarium, under genus 809 [788], *Volkameria*, sheet No. 2 is inscribed "*aculeata*" in the handwriting of Linnaeus, but is actually *C. inerme*. Sheet No. 3 is inscribed "*inermis*" in his handwriting, is correct, and, according to Savage (1945), was present in the second enumeration, and is regarded

as the type (holotype) by Fletcher (1938). Sheet No. 4 is also inscribed "*inermis*" and "(V^o.) *Douglassia* Houst. gen. in Millero" in Linnaeus' hand and is correct.

Volkameria inermis L. appears actually to be based on Hermann 23 from Sri Lanka, deposited in the British Museum herbarium; *V. inermis* = Ait. is a synonym of *C. ligustrinum* (Jacq.) R. Br.

When Linnaeus' species was transferred from *Volkameria* to *Clerodendrum* by Gaertner (1788) he noted: "*Clerodendrum inerme*. ibid. *Nir notsjil*. Rheed. mal. 5. p. 97. t. 49. bene. *Volkameria ramis inermibus*. Linn. syst. veg. 577. *Burende. zeylonens.* E collect. sem. hort. lugdb. *Bacca turbinata* (a), *tetracollis*, *tetrapyrena* (b), *per maturitatem quadripartibilis* (c.c.). *Caro crassiusculo, suberosa, forso pyrenarum adnata. Pyrenae coriaceo-crustaceae, albicantes, deorsum insigniter acuminatae, superne rotundato gibbae, uniloculares* (d). *Semina* (e) *cavitati ossiculorum respondentia. Embryo* (f.g.) *erectus, carnosus, albus. Unicum quidem semen, suo Clerodendro, tribuit Burmannus, & hunc manifestum errorum suum quoque fecit Linnaeus: in omnibus enim Pinnakolae baccis con-constanter [sic] reperio semina quatuor, & titidem quoque Petasitae suo adscribit Rumphius.*"

Because the apparent great variability of this taxon may eventually result in its division into several subspecific taxa (as, indeed, has already been suggested by some botanists), it seems worthwhile to repeat here the original descriptions of several of the proposed specific segregates.

Volkameria nereifolia Roxb. was originally (1832) described as "Shrubby. Leaves tern, linear-lanceolate. Peduncles axillary, three-flowered. A shrubby species, found indigenous on the Island of Mascal, on the coast of Chittagong; where it blossoms about the close of the rains, and the seeds ripen in February. Stem short, but straight, stout and ligneous, soon dividing into many straight, nearly erect branches and branchlets; bark smooth, and of a light ash-colour and marked with light-coloured, small, elevated specks. Leaves tern, rarely opposite, linear-lanceolate, entire, acute, smooth, about three inches long, and very generally under half an inch in breadth. Petioles short, and inserted on permanent elevated leaves. Peduncles axillary, much shorter than the leaves, generally three-flowered. Bractes opposite, ensiform. Calyx campanulate, mouth evenly five-toothed, permanent. Corol with a rather short, slender, curved tube, and unilateral border, composed of five, equal, oval, entire segments. Stamina twice the length of the corol, incurved or recurved, according to the length of time the flower has been expanded. Germ superior, four-celled, with one ovulum in each. Style length of the stamina. Stigma bidentate. Capsule (Berry, Gaertn.) broad-turbinate, four-grooved, size of a nutmeg, when ripe dry, and spontaneously dividing first into two and afterwards into four parts. Cortex pretty smooth, dark brown. Pulp in large quantity, somewhat spongy. Seed in each division of the capsule, oblong, tapering towards the base. Integuments two, both soft, thin and white. Perisperm none. Embryo, erect. Cotyledons conform to the seed, equal. Plumula two-lobed. Radicle inferior, the whole much like *Clerodendrum inerme*. Gaertn. i. t. 57."

Blanco's original (1837) description of his *C. capsulare* (which he kept separate from *Volkameria inermis*) is: "Tronco cuadrado por el extremo. Hojas opuestas, lanceoladas, enteras y lampiñas. Pecíolos cortos. Flores axilares, en umbelas de tres flores. Cal. muy pequeño de figura de campana, con cinco dientes: dos á un lado y tres al otro. Cor. larguísima, blanca, con el tubo filiforme, algo encorvada, bilabiada. Labio superior con dos lacinias obtusas. Inferior con tres obtusas. Estam. didinamos, muy largos, fijos mas abajo de las divisiones de la corola, revueltos en la madurez de varios modos. Germen conico. Estilo un poco mas corto que los estambres. Estigma bifido. Cagilla de figura de maza, con un aposento y cuatro semillas grandes. - Arbusto que se eleva á la altura de un hombre. Es frecuente en las orillas del mar. Flor. en Jul." In his 1845 work he adds: "Parece ser variedad del *fortunatum*."

Dietrich (1843) distinguishes the three taxa accepted by him as follows: *C. inermis* -- "fol. ovatis vel ovalibus calycibusque glabris; ramis compressis; tubo corollae elongato.... In Ind. or. China et Nov. Holl." *C. commersonii* -- "fol. ovatis utrinque attenuatis integerrimis glabris; corymbis axillaribus trichotomis pubescentibus; tubo corollae elongato.... In uns. Philippin." *C. coromandelianum* -- "fol. ovatis acutis integerrimis glaberrimis; panicula terminali corymbosa. In Coromandelia et Nov. Holl." The third of these is obviously a description mostly of *C. floribundum* var. *latifolium* F. Muell.

Gray's original (1862) description of var. *oceanicum* is: "foliis majoribus (2½--5-pollicaribus) magis acuminatis; calyce truncato denticulis 5 minutis; cymis nunc 5--7-floris. -- Samoan, Tonga, and Feejee Islands. This must be Forster's *Volkameria inermis*, and perhaps Sprengel's *Clerodendron Commersonii*. I have seen no intermediate forms (though they probably occur) between this and the true *C. inermis* of India, &c., which has smaller and blunter leaves, and, as described by Schauer, a distinctly 5-toothed calyx, 'dentibus lato-triangularibus acutis.'"

Clarke (1885), in keeping *C. inermis* and *C. neriifolium* apart, says for the latter: "Leaves mostly ternate, 3½ by 1½ in.; or, in the extreme type form of Roxburgh, sublinear, 4½ by 1/3 in. Cymes and drupe rather larger than in *C. inermis*. Calyx often ½ in. diam. in fruit. -- Otherwise as *C. inermis*, of which this may be a var., as Bentham and Kurz have treated it."

Kuntze (1891) gives an interesting discussion of his concept of *C. inermis*: "*Cl. inermis* Gaertn. 1788, R. Br. 1811 (*Volkameria i.* L.) α *ovalifolium* OK. (= α *genuina* S. Kurz 1877 = *Ovieda ovalifolia* Juss. 1806 in Ann. mus. VIII 76 aus Pondicherry; von Schauer in DC. prod. vergessen; = *Cl. ovatum* Poir. 1816) Folia obtusa. Hongkong. Die Früchte sind meist kreiselförmig, wie sie auch Jussieu beschreibt; sie ändern aber (bei α - γ) selten auch fast kugelig (= f. *subglobosa* O.Ktze.) und länger (1:2--2½) fast keulenförmig = f. *corynecarpa* O. Ktze.; ausserdem beschreibt noch Clarke ein v. *macrocarpa* mit 2--3 X grösseren Früchten. *Ovieda ovalifolia* Juss. = *Cl. ovatum* Poir. ward von Steudel irrig mit dem australischen *Clerodendron ovatum* R. Br. = *Cl. medium** R. Br. prod. 510 em. incl. *Cl. attenuatum*, *floribundum*, *ovatum*, *coriaceum* R. Br. l. c. 511) identificirt; Schauer in

DC. prod. XI citirt hierzu *Volkameria inermis* L. fl. zeyl. p. 231, was Clarke in fl. brit. India copirt; beiden haben übersehen, dass Linné in der fl. zeyl. noch gar keine Speciesnamen hatte, auch steht *Volkameria* fl. zeyl. nicht p. 231, sonder under Nr. 231. φ *latifolium* O. Ktze. Folia ovata acuta (1:±2) Java: Batavia. γ *neriifolium* S. Kurz (Wall.) Folia lanceolata (1:±3) Anam: Turong."

If Kuntze is correct in this interpretation of Jussieu's *Ovieda ovalifolia*, then this binomial belongs in the synonymy of *C. inerme* instead of in that of *C. floribundum* var. *latifolium* F. Muell. where it has been placed by me in the present series of notes (59: 427).

Prain (1903) keeps *C. inerme* and *C. commersonii* separate, but adopts Wallich's *C. neriifolium* for *C. commersonii*.

Brandis (1906) regards the true *C. inerme* as from Sri Lanka, Malaya, China, New Guinea, northern Australia, Taiwan, and Polynesia and comments that it is "Closely allied" to *C. neriifolium* Wall. from the "Sea coast of Chittagong, Aracan and Tenasserim; L[eaves] frequently ternate, linear or lanceolate, 2--4 in. long, drupe larger."

Merrill (1912) says: "The type of *Clerodendron commersonii* (Poir.) Spreng. was from the Philippines, Poirét stating that it was collected by Commerson; like the other Philippine plants ascribed to Commerson as collector, it was in all probability collected by Sonnerat."

In his 1917 work he says that "several authors have maintained the Malayan-Polynesian form specifically distinct from the typical Indian *Clerodendron inerme* (Linn.) Gaertn. If this distinction is maintained, the Malayan-Polynesian form must be called *Clerodendron commersonii* (Poir.) Spreng., which is the oldest valid name for it. *Jasminum litoreum* was first reduced by Linnaeus to *Volkameria inermis* Linn. in Stickman Herb. Am. (1754) 19, Amoen. Acad. 4 (1759) 129, Syst. ed. 10 (1759) 1122, and all succeeding authors have followed Linnaeus, citing the Rumphian figure under either *Volkameria inermis* Linn. or *Clerodendron inerme* Gaertn.

In his 1918 work Merrill maintains *C. commersonii* (Poir.) Spreng. as distinct from *C. inerme*, with *C. neriifolium* Wall. and *C. capsulare* Blanco as synonyms of the former, noting that "This species is common along muddy shores and tidal streams throughout the Philippines. It is generally retained as a species distinct from *C. inerme* Gaertn., but, if distinct, then Poirét's specific name is the older. The type of *Volkameria commersonii* Poir. was from the Philippines (see Merrill in Philip. Journ. Sci. 7 (1912) Bot. 245." In his 1923 work he reunites the two taxa.

Domin (1928) adopts *C. commersonii* Spreng. as the name for the Australian population, whose natural range he gives as "von der malayischen Halbinsel über Malaya und die Philippinen nach China, Polynesien und Australien (Nord-Australien, Queensland, nördl. N. S. Wales)." "Das echte *C. inerme* Gaertn. non R. Br. (= *Volkameria inermis* L.) ist auf Ost-Indien und Ceylon beschränkt. O. Kuntze...halt aber beide für konspezifisch."

Merrill, in 1935, asserts that Loureiro's (1790) *Volkameria inermis* Linn. was based on a specimen "Habitat inculta prope Cantonem Sinarum" preserved in the Paris herbarium, and that the species "is common in suitable habitats near Canton".

Fletcher (1938) regards the type of *C. nereifolium* as from Burma. Lourteig (1966) affirms that Burman's *Jasminum glanduliferum*, *foetidum*, *Zeylanicum* is based on P. Hermann 24.

Fosberg, Sachet, & Oliver (1979) regard *C. commersonii* (Poir.) Spreng. and *C. nereifolium* Wall. as synonyms of *C. inerme* var. *inerme* -- as distinct from *C. inerme* var. *oceanicum* A. Gray.

Clerodendrum ovatum Poir. is based on a plant collected at Pondichery, Union Territory (India).

In regard to the various homonyms referred to in the synonymy of *C. inerme*, it should be noted, in passing, that *Ovieda inermis* Burm. f. (1894) and *O. inermis* Jacks. (1921) are synonyms of *Clerodendrum indicum* (L.) Kuntze; *Volkameria inermis* Blanco (1837) is a synonym of *Clerodendrum intermedium* Low; *Volkameria inermis* Reinw. ex Blume, Mus. Bot. Lugd. Bat. 1: 239 (1849) is *Geniostoma rupestre* Forst., in the *Loganiaceae*; *Volkameria inermis* Sessé & Moc. (1976) is *Clerodendrum ligustrinum* (Jacq.) R. Br.; and *Volkameria inermis* var. φ Ait. is also *Clerodendrum ligustrinum* (Jacq.) R. Br.

Clerodendron condensatum Miq. has been regarded by some authors as another synonym of *C. inerme*, but I regard it as representing *C. bracteatum* var. *sumatranum* Ridl.

In should perhaps be pointed out here that some recent workers use the name, *C. inerme* var. *oceanicum* A. Gray for the large-leaved Pacific Oceanica population of the species, well represented by such collections as Canfield 623, Raylerson 781, and Wilkes s.n. [Tonga]. Other authors use the name, *C. nereifolium* var. *lanceolatum* Wall. for the form with narrowly lamceolate leaf-blades which are typically 7.5--10 cm. long and only 8--14 mm. wide, typified by Wallich 1789 φ from the Calcutta Botanical Garden. Kuntze 4247 from Java is the type collection of *C. inerme* var. *latifolia* Kuntze, deposited in the Britton Herbarium at the New York Botanical Garden.

It it also worth mentioning here that the unnumbered Shivarajan collection, cited below [10.12.74] has the "leaves invariably acuminate as in this specimen. Possibly might be a different variety" according to the collector. It appears to me to be the *C. nereifolium* form of the species. The Collector undetermined 297 collection, in the Buitenzorg herbarium, also appears to represent this same form. On the other hand, most of the Hong Kong collections cited below exhibit quite small-sized leaves and may possibly better be classified as representing f. *parvifolium* Mold., which see.

Some specimens examined by me are somewhat anomalous; for instance, C. B. Clarke 33371 φ , from the Sundarbans [Bangladesh], exhibits very small leaves, the blades only 5--17 mm. long and 5--11 mm. wide. apically obtuse or emarginate -- it may not represent this species, at least, not in its typical form, although it is commonly considered as such. Niering 644 shows fasciated stems; Rodin 518a and Salsedo 123 have corolla-tubes 2 inches in length.

Numerous inaccuracies and errors occur in the literature of *Clerodendrum inerme*, among which may be mentioned the following. Clarke (1885) refers to Linnaeus' 1747 reference as page "231" instead of page 104 -- the reference actually is to genus no. 231 on page 104; Decaisne (1834) cites the Gaertner (1788) reference as "t. 5" instead of 57, the Rumpf 1747 reference as vol. "6" instead of 5, and the

Rheede 1685 reference as page "9" instead of 97. Fernandez Villar (1880) mis-cites the Schauer (1847) reference as page "60" instead of 660. Watt (1889) mis-cites the Clarke (1880) reference as page "586" instead of 589.

Merrill (1912, 1923) cites the Gamble (1908) work as being published in "1909" -- perhaps correctly so, but I have not as yet seen any evidence to indicate that the 1908 date, usually used, is incorrect. Merrill (1914) refers to a "*Clerodendron inerme* W. F. Wight", supposedly referred to by Safford (1905), but in the Safford publication the name of the plant described is plainly written "*Clerodendrum inerme* Gaertn."

Hallier (1918) cites the Pulle (1911) reference as "1910" and it is also so dated by Pulle himself (1914) -- on what evidence I do not know. Hallier (1918) also cites the Schumann & Lauterbach (1900) reference as "1901" -- again, on evidence not known to me. In the same 1918 work he mis-cites the Miquel (1858) reference as "1856", but pages 705--960 of the work in question were definitely not published until 1858.

Bakhuizen (1929, 1935), Babu (1977), and Varma (1981) all mis-cite the Gaertner 1788 reference as "t. 75" instead of 57. Fletcher (1938) cites the Gamble (1908) reference as "1908". Masamune (1955) cites the Maximowicz (1886) reference as "1887", but pages 12--121 of the Bulletin's Volume 31 were actually issued on April 15, 1886" and of the Mélanges Volume 12 also on that date. Varma (1981) mis-cites the Linnaeus (1753) reference as page "889" instead of 637. The Blume (1826) work is sometimes cited as part "9" instead of 14.

It is also worth mentioning here that Chamisso's work (1832) occurs on a page numbered "150". but this is obviously a typographic error for "105", as can be seen from the numbers of the preceding and succeeding pages.

The Hooker & Arnott (1837, 1838) references are often mis-cited as published in "1841", but pages 193--240 were actually issued in 1837 and pages 241--366 in 1838. Similarly, the Schumann (1887) work is often cited as "1888", the titlepage date, but the page herein referred to was actually issued on November 11, 1887.; likewise, the Baillon (1891) reference to the species herein discussed is often cited as published in "1892", the titlepage date for the entire volume. Again, the Lam (1924) reference is sometimes cited as "1925", the titlepage date for the volume -- the page that concerns us here appeared in 1924.

The Itô (1928) reference to our species is sometimes (as by Worsdell, 1941) dated "1927", but the evidence for this date is unknown to me. The Domin (1928) work is sometimes cited as "122 (89)"; the Foreman (1972) reference is sometimes mis-cited as "1971", the titlepage date.

Stone refers to the fruit of *Clerodendrum inerme* as a "4-lobed capsule", whereas it is actually a drupe.

In the list of citations (below) the following collections are cited as from cultivated material, even though their actual labels do not specifically indicate this: *Herb. Fischer s.n.*, *Herb. Lugd.-Bat.* 908.266-81, 908.266-82, 908.266-87, 909.83-95, & 913.13-119, *Herb.*

Reichenbach f. s.n., Herb. Rottbll s.n., Herb. Stephan s.n., Lane 627, Robinson s.n., and Salim s.n.; Fosberg 33867 bears a label on which the collector questions that it may have been "planted?"

Hara (1948) lists an illustration of this species on fig. 2490 in some as yet unidentified (by me) Japanese work published in 1938.

The illustrations given by Baillon (1891) as *Ovieda inermis* and *O. foetida* do not pertain to *Clerodendrum inerme*. Obviously, they depict a species in the Subgenus *Cyclonema*, probably *Clerodendrum serratum* (L.) Moon, which see.

The illustration given by Mullan (1931) shows anatomical leaf structures for water storage.

Engler (1886) cites unnumbered collections of *C. inerme* from Timor, Viti Levu (Fiji Islands), and New Guinea; Schumann (1887) cites *Hollrung 212*, as well as unnumbered Naumann and Reedy collections, from New Guinea; Maximowicz (1889) cites unnumbered collections by Loureiro and by Millett from Canton, by Vachell from Macao, by Hance from Whampoa, by Wright from Hong Kong, and by Hooker & Arnott and by Tanaka from the Ryukyu Islands, as well as *Oldham 392* from Taiwan. Schumann & *Hollrung* (1889) cite *Hollrung 42* from New Guinea. Drake del Castillo (1892) cites *Barclay s.n.* and *Seemann 253* from Fiji, *Wilkes U. S. Expl. Exped. s.n.* from Samoa, and unnumbered Harvey, Home, and Mathews collections from the Tongan Islands, ascribing the species to "les régions chaudes de l'Asie et de l'Océanie".

Hemsley (1894) cites unnumbered collections of Harvey, Lister, Mathews, and Moseley from the Tongan Islands, crediting the species also to New Caledonia, the Fiji Islands, and Navigator Islands [=Samoa], as well as it being "a common sea-side shrub in tropical Asia and Australia".

Schumann & Lauterbach (1900) cite from the Territory of New Guinea the following: *Hollrung 42* & *212*, *Lewandowsky 25*, and *Warburg s.n.*; from New Britain: *Dahl 52* and *Lauterbach 164*; from New Ireland: *Warburg s.n.*; from the Admiralty Islands: *Moseley s.n.*; from Bougainville: *Guppy s.n.*; and from the Marianna Islands: *Chamisso s.n.* and *Lesson s.n.*

Clarke (1904) cites *Schmidt 321* & *552d* from Kahdat Island, Thailand; Williams (1905) cites the same collections but adds *Schomburgk 242* & *274* from Thailand. Cooke (1905) cites unnumbered collections of Law from Konkan, Cooke, Graham, and Woodrow from Bombay Island, and Woodrow from Gujarat.

Ridley (1911) cites unnumbered collections by Curtis from Langkawi and by Keith from Perlis, where, he says, the plant is "Common in tidal swamps". Merrill (1912) cites *Gaudichaud s.n.* from Macao, *Henry, Kawakami, & Nakahara 822* from Taiwan, *Foxworthy 552* from Celebes, and *Volkens 244* from Yap.

Pulle (1914) cites *Gjellerup 292* and *Römer 18* from West Irian -- in his 1911 work he cites *Branderhorst 153* and *Versteeg 1007* & *1840* from the same area. Reching (1914) cites his nos. *4098* & *4936* from Poperang and Bougainville Islands in the Solomons.

Hallier (1918) cites from Sri Lanka *König s.n.*; from Sumatra *Forbes 1802*; from Borneo *Hallier B.261* and *Korthals s.n.*; from Java *Boerlage s.n.* (Leiden Island); from Lombok *Elbert 593* & *2090*; from

Buton Elbert 2683; from Tukang-besi Elbert 2539; from Buru DeVriese & Teijsmann s.n.; from Ceram DeVriese & Teijsmann s.n.; from Little Ceram Forsten s.n. and Warburg s.n.; from Luzon Hallier 3516a; and from Yap Hallier 3516b, as well as Raap 390 from Java. He also reports seeing the species on Cebu, Eten, Pingelap, Toloas, Leleh, Ponape, and Kusaie islands. Merrill (1918) cites his *Sp. Blanc.* 813 from Luzon.

Moore (1921) cites Compton 641 from Ouéré island, New Caledonia, where the species is said to be "abundant in littoral sand". Lam (1924) cites Kraemer s.n., Ledermann 14088, and Raymondus 305 from Korrör, Fritz s.n. from Saipan, Kraemer 3 from Truk, Volkens 132 & 244 from Yap, Ledermann 13660 from Ponape, Moszkowski 466 from West Irian, Dahl 52, Lauterbach 164, and Weber 26 from New Britain, and Peekel 571 from New Ireland. Bakuhuizen (1929) cites Brass 853, 1181, & 1548 from New Guinea. Guillaumin (1932) cites his no. 185 from Fila island in the New Hebrides, as well as Guillaumin & Baumann 11142 from the same area; Hosokawa (1933) cites his nos. 1812, 1821, & 2069 from Taiwan.

Bakuhuizen (1935) cites Kajewski 2244 from Bougainville and 2407 from Guadalcanal. Christophersen (1935) cites the following from the Samoan Islands: Christophersen 2783 & 2868, Christophersen & Hume 2006, 2381, & 2453, and Stehlin s.n. from Savaii; Garber 584 & 694 from Tau; Diefenderfer 14, Garber 963, and Wilder 74 from Tucuila; and Christophersen 478, Eames 1, and Wilder 428 from Upolu.

Fletcher (1938) cites from Thailand as *Clerodendrum inerme*: Bourke s.n., Collins 1440, Kerr 3672, 16133, & 17037, Marcan 2456, Put 1538 & 1701, and Smith 928, and as *C. neriifolium*: Collins 96, Curtis s.n., Kerr 2039, 2127, & 11693, and Vanpruk 839. He gives the distribution of the former as India, Sri Lanka, Burma, Indochina, and Malaya, and of the latter as Burma, Indochina, Malaya, China, Australia, and Polynesia.

Lam & Meeuse (1945) cite Lam 2683 from Karakalang island in the Palau group of islands, while Taylor (1950) cites his nos. 46-1073, 46-1137, 46-1173, 46-1367, 46-1400, 46-1480, & 46-1493 from Rongelap and Bikini Atolls in the northern Marshall Islands. Masamune (1955) cites unnumbered collections by himself and by Kudo, Simada, and Suzuki from the Ryukyu Islands of Amamiosima, Daitozima, Iheyazima, Iriomote, Komi, Minamidaitozima, Okinawa, Takarazima, Tanegashima, and Yonasuni. Yuncker (1959) cites Moseley s.n. and Yuncker 15018 & 15170 from Tongatapu, Lister s.n. and Yuncker 15526 from Eva, Yuncker 15844 from Nomuka, Yuncker 15760 from Lifuka, and Crosby s.n. and Harvey s.n. from Vavau in the Tongan Islands; Van Royen (1960) cites his no. 4823 from New Guinea. Li (1963) cites from Taiwan: Faurie 257 373, Henry s.n., Huang 2330, Kawakami 7174, Kudo & Suzuki s.n., Morimoto 29L, Nagasawa 89, Oldham 392 & 397, Playfair 46, Tanaka & Shimada 11030, and Wilson 9867.

Maheshwari (1963) cites Maheshwari 413, 1173, & 1285 from Delhi, India; Hatusima (1966) cites his no. 28506. Sebastine & Elliot (1967) cite Sebastine 10644 from Madras; Majumdar (1969) cites unnumbered Nair and Nair & Malhotra collections from Rajasthan.

Stone (1970) cites his nos. 3849, 4921, & 5078 from Guam, where,

he says, it is common "along the coasts or a little way inland". Foreman (1972) cites *Kajewski* 2244, *Rechinger* 4098 & 4936, N.G.F. 31175 & 31562, *Craven & Schodde* 499, and *Schodde & Craven* 3844 from Bougainville island; *Stoddart & Fosberg* (1972) cite *Fosberg* 51247 and *Stoddart* 1553 & 1615 from Manauli and New islands in the South Indian Sand Cays; *Altschul* (1973) cites *Kajewski* 2407; *Fosberg, Falanruw, & Sachet* (1975) cite *Moore* 317 from Pagan and *Falanruw* 1730 from Sarigan in the Mariana Islands.

Walker (1976) cites from the Ryukyu Islands *Wright* s.n. and specifically from Okinawa: *Hatusima* 7242 & 22854, *Moran* 4995 & 5055, *SIRI* 7133, and *Walker* 7578; from Miyako: *Fosberg* 38478; from Irabu & Shimaji: *Okuhara & Sunagawa* 109; from Ishigaki: *Fosberg* 37604; from Ir. omote: *Fosberg* 37769, *Koidzumi* s.n., *SIRI* 6554, and *Tagewa & Iwatsuki* 4634; and from Yonaguni: *Hatusima* 24579. *Babu* (1977) cites *Babu* 33292 from Dehra Dun, India.

St. John (1977) cites *Hlrilman* 359 and *Kirch* 306 from Niuetoptapu island in the Tongan Islands. From Taiwan *Hsiao* (1978) cites *Faurie* 257, *Kawakami* 7174, *Morimoto* 291, *Playfair* 46, *Tanaka & Shimada* 11030, and *Wilson* 9867; *Varma* (1981) cites *Varma* 210 from Bhagalpur, India, while *Paliwal & Singh* (1982) cite their no. 184 from Uttar Pradesh. *Reis & Lipp* (1982) cite *Fosberg* 26733 from the Marshall Islands, 25396 from the Mariana Islands, and 47648 from the Caroline Islands. *Jafri & Ghafoor*, in a personal communication to me, cite unnumbered collections of *Ali*, *Jafri*, and *Stewart* from cultivation in Pakistan.

Herbarium material of *Clerodendrum inerme* has been misidentified and distributed in some herbaria as *Aegiphila* sp., *Clerodendron sagraei* Schau., *Glossocarya linnaei* (Thw.) Benth., *Gmelina villosa* Roxb., *Lagerstroemia indica* L., *Volkameria capitata* Willd., and *Rubiaceae*.

On the other hand, the *Meebold* 3831, distributed as *Clerodendrum inerme*, actually is *C. aculeatum* (L.) Schiecht., while *Thorel* 219 is *C. cochinchinense* Dop, *Kanehira* 313 is *C. cyrtophyllum* Turcz., *Clemens* 42729, *Herb. Prager* 18686, *Holtze* s.n., and *Kreutzpointner* s.n. [H. B. Monac, 13 Oct. 1859] are *C. floribundum* R. Br., *Hardy* s.n. and *White* 12401 are *C. heterophyllum* (Poir.) R. Br., *Clemens* 42078 and *Sivarajan* 1228 are *C. heterophyllum* f. *angustifolium* Mold., *Baymann-Bodenheimer* 5072, *Bernardi* 15300, *Burmman* 10, *Clemens & Clemens* 3364, *Comanor* 896, *Cooray* 68054016R, *Escritor Herb. Philip. Bur. Sci.* 21080, *Fosberg & al.* 51218 & 53627, *Franc* 1384 & 2233, *Guillaumin* 8545, *Herb. Cooke* s.n. [College Bot. Gard., Poona], *Hohenacker* 78, *Jayasuriya* 1352, *Kuntze* 3683 & 3800, *Kuriakose* s.n. [Korealam, 13-1-33], *Lohen* 4425, *St. John* 24063, *Simpson* 7917, *Sumithraarachchi & Sumithraarachchi* DBS.794, *Viellard* 1049, *Wirawan* 683, *Wright* s.n., *Yeshoda* 215 (and possibly also *Chun* 1032, *Hu* 12159, and *Woo* 198) are *C. inerme* f. *parvifolium* Mold., *Khoo & Ming* N.K.002 is *C. laevifolium* Blume, *Susuki* 4398 is *Ligustrum* sp., and *Meebold* 17029 is not verbenaceous.

Citations: VIRGIN ISLANDS: *St. Croix: Schouw* s.n. (Cp). BRAZIL: *Guanabara: Glaziou* 14164 (B, Br, N, P, P); *Strang* s.n. [Herb. Brad. 45715] (Mu). Rio de Janeiro: *Araujo* 3268 [Herb. FEEMA 15460] (Ld),

4098 [Herb. FEEMA 18157] (Lc); Araujo & Maciel 4300 [Herb. FEEMA 18970] (Fe); Sampaio 8738 (Ja--44980, Ja, Ja). EGYPT: Fawzi s.n. [26.12.1952] (Gz). ZAIRE: Vanderyst 13539 (Br). MASCARENE ISLANDS: Mauritius: Herb. Mus. Paris s.n. (W--2494639). PAKISTAN: Sind: Gul s.n. [8.10.67] (Kh); Iqbal s.n. [5.8.1957] (Kh). INDIA: Andhra Pradesh: Shanta 150 (Hi--209671); Wagh 4645 (Xa). Gujarat: Hohrzki s.n. [Cutch] (W--74535). Karnataka: Bélanger 249 (L); Saldanha 15340 (W--2653637); Shepherd s.n. [Mysore] (L). Kerala: Meebold 12613 (S); Stocks, Law, Etc. s.n. [Malabar, Concan] (L); R. Willis s.n. [X.94] (Gz). Madhya Pradesh: Nafday 124 (Ba). Maharashtra: Ezekiel 30397 (Xa); Herb. Blatter 19 (Xa), 20 (Xa), 68 (Xa), 15481 (Xa), 17218 (Xa); Patel s.n. (Xa); Randeria 280 (Xa), 433 (Xa); Santapau 142.13 (Xa), 142, 19 (Xa), 9850 (Xa), 21320 (Xa); Sedgwick & Bell 3947 (Xa); Shah 6659 (Xa), 7506 (Xa); Shenay 140 (Xa), 5211 (Xa). Tamil Nadu: Collector undetermined s.n. [1850] (L); Kuriakose s.n. [18-1-33] (N, N); Wallich 1788F (L); R. Wight 2318 (L, Mu--1402, S); Yeshoda 215 (N). Union Territory: Collector undetermined s.n. [Pondichery, Juliet 1803] (L). Uttar Pradesh: Wallich 1789/4 (L). West Bengal: C. B. Clarke 8481 (L), 21667 (W--802815), 33371b (X); Collector undetermined 297 (Bz--19670, Bz--19671); Heinig & Gammie s.n. [Bengal] (Na--10124); Jenkins s.n. [Bengal] (Ac); S. Kurz s.n. [Mutlah] (Bz--19669, W--261276). State undetermined: Collector undetermined s.n. (S); Herb. Schumacher s.n. (L); Herb. Vahl s.n. (Cp); Heyne s.n. (L); Hohenacker 78 (X); König s.n. (Le, S); Minpy s.n. (X); Sparrman 14 (S); Wallich 1788/3 (L). SOUTH INDIAN SAND CAYS: Juhu: Acland 962 (Xa). Manauli: Fosberg 51247 (W--2669637); Stoddart 1553 (W--2625050) New: Stoddart 1615 (W--2625114). SALSETTE ISLAND: Acland 963 (Xa). MALDIVE ISLANDS: Malé: Fosberg 36825 (N, W--2431011); Haly s.n. [1892] (Pd); Willis 118 (Pd). SRI LANKA: Amaratinga 332 (Pd), 1890 (Pd); Cooray 69092807R (Ld, Pd, W--2612072); L. H. Cramer 3362 (W--2760846); Davidse 7773 (Ld, W--2803431); Dubuy s.n. [Aug. 27, 1860] (L); Fosberg & Balakrishnan 53455 (Ac, W--2750170); Fosberg, Mueller-Dombois, Wirawan, Cooray, & Balakrishnan 50907 (W--2676594); Gardner s.n. [Thwaites C.P. 1949] (Br, L, X), s.n. [C.P. 1949, Galle] (Pd), s.n. [C.P. 1949, Jaffna] (Pd), s.n. [C.P. 1949, Negumbo] (Pd, Pd); Grupe 103 (Pd, W--2611852), 120 (W--2611846); Herb. Linnaeus 809/2 (Ls, N--photo), 809/3 (Ls--type, N--photo of type), 809/4 (Ls, N--photo); Moldenke, Moldenke, & Jayasuriya 28272 (Ac, Gz, Kh, Ld, Pd, Tu, W--2764528); Moldenke, Moldenke, Jayasuriya, & Sumithraarachchi 28119 (Ac, E, Gz, Kh, Ld, Pd, Tu, W--2764564); Mueller-Dombois 68042002 (Ac, Pd, W--2612074); Mueller-Dombois & Cooray 67121033 (Pd, W--2612076), 67121057 (Pd, W--2612075); Waas 732 (W--2803432); Wirawan, Cooray, & Balakrishnan 951 (Ac, N, Pd, W--2656636); Worthington 3805 (K), 4166 (K), 4896 (K), 5143 (K). BANGLADESH: Collector undetermined 25 (W--261277); Hooker f. & Thomson s.n. [Sunderbunds] (L); T. Thomson s.n. [Sunderbunds] (L). BURMA: Tenasserim: Helfer 6056 (L, Mu--1459); Malgrano s.n. (Pd); Wallich 1788/2 (L), 1789/1 (L). Upper Burma: Griffith 6057/1 (L, Ut--11493, V); S. Kurz 1044 (W--261275). ANDAMAN ISLANDS: South Andaman: King's Collector s.n. [28/6/90] (Pd), s.n. [20-10-1895] (Bz--19672). CHINA: Fukien: Chung 2004 (Bz--19690); En 2102 (Bz--19689); Ging 15737 (Ws); Po 12117 (Ur), 12961 (Um--153);

A. N. Steward 3092 (Ca--44734); Tai 11790 (Ur). Kwangtung: *Dahlström* 348 (S); *Ekeberg s.n.* (S); C. O. Levine *s.n.* [Herb. Canton Chr. Coll. 914] (W--1091692); *McClure* 625 (I), 1161 [Herb. Canton Chr. Coll. 13102] (Bz--19688, I); *Ping* 1836 [Herb. Canton Chr. Coll. 13661] (Ca--287554); *Ting & Shih* 1462 (Ac); W. T. Tsang A.687 [Herb. Lingnan Univ. 19091] (N), *s.n.* [Herb. Lingnan Univ. 16650] (I); Y. Tsiang 2077 (Bz--19686, N); *Ying* 447 (Du--250188, N), 864 (Du--200927). CHINESE COASTAL ISLANDS: Hainan: *Lau* 275 (B, Bi, Ca--525025, Mi, N, S, W--1629147), 3912 (N); *Lei* 1080 (I), 1124 (I), 1351 (Ba); *Liang* 36591 (S), 62887 (Go, N, W--1670945), 62947 (Mu, N), 66591 (N); *Tso* 23038 (N); *Wang* 33829 (N), 34861 (N); *Wu* 1090 (Du--250183). Honam: C. O. Levine Herb. Canton Chr. Coll. 202 (W--778578), 1126 (Ka--62837, W--778578, W--874849, W--877405, W--1010305). Lantau: *Chun* 4876 (Ws); *McClure* Herb. Lingnan Univ. 13102 (S); *Tak* 161 [Herb. Canton Chr. Coll. 16650] (Du--250179). HONG KONG: Honk Kong Island: *Bowring & Anderson s.n.* (S); *Champion s.n.* (K); *Chan* 1032 (Mi); *Dahlström* 36 (S); C. Ford *s.n.* (N); *Hu* 8057 (W--2697445), 8329 (W--2711244), 12065 (W--273234.); *Taam* 1341 (Ba, C1--82498, Mi, N, W--2063693); *Weiss* 1589 (Bz--19691); P. W. Woo 198 (Mi); *Woo & Woo* 425 (Mi); C. Wright *s.n.* (W--44909); *Ying* 2937 (N). Kowloon: *Setchell s.n.* [April 30, 1929] (Ca--383578). HONG KONG OFFSHORE ISLANDS: Central: *Hu* 12159 (Mi, W--2731041). Tamon: *Hu* 11970 (W--2730635). THAILAND: *Collins* 1440 (W--1701227); *Cunniff* 53 (Ws); *Hansen & Smitinand* 12256 (Cp, Ld), 12367 (Cp, Ld); Herb. Roy. Forest Serv. 6563 (Mi); *Larsen & Larsen* 33773 (Ac, Ld); *Larsen, Smitinand, & Warncke* 1216 (Ac, Ld), 1248 (Ld); J. Schmidt 552d (Mu--4180); *Schomburgk* 242 (Pd); *Sørensen, Larsen, & Hansen* 2525 (Cp); *Vanpruk* 839 (Bk--13823); F. K. Ward 37471 (Bz--19665). KOH CHANG ISLAND: *Sørensen, Larsen, & Hansen* 7104 (Cp). MALAYA: Johore: B. C. Stone 8682 (K1--10672, Ne--33491). Malacca: *Carrick* 715 (K1--3685); W. Griffith *s.n.* [Malacca, 1845] (Br). Pahang: *Burkill & Haniff* 17334 (Ca--251291); M. R. Henderson 18499 (Bz--19666). Perak: *Scortechini* 1382 (S); *Seimund s.n.* [20th Nov. 1925] (Bz--19668), *s.n.* [30th Nov. 1925] (Bz--19667). Selangor: *Collector undetermined* 4634 (K1--4635). Singapore: *Collector undetermined s.n.* (Bz--19673); *Ridley s.n.* [1896] (Bz--19674); B. C. Stone 6240 (K1--5162); *Togashi* 6221222 (W--2594187); *Wallich* 1788/1 (L, Pd). State undetermined: *Riedel s.n.* (K). MALAYAN ISLANDS: Langkawi: B. C. Stone 10989 (K1--17109); *Students* 5A (K1--13703), 110 (K1--13678); *Turnau* 748 (K1--2748); *Yap* SK.320 (K1--17650). Tioman: *Yean s.n.* (Ne--118287). VIETNAM: Annam: *Pételot* 1402 (Ca--223766, W--1717018); C. B. Robinson 1143 (N); *Squires* 371 (Bz--19687, Ca--307207, Gg--159496, L, La, Mi, N, Pd, W--1425817); E. H. Walker 8056 (W--2395314). Cochinchina: *Pierre* 186 (B, Ca--53744), 886 (S); *Thorel* 219 (B, Bz--72837, Bz--72838, Ca--54955, N, S). Pulau Condor Island: *Perry* 186 in part (Ca--53973). RYUKYU ISLAND ARCHIPELAGO: Amamioshima: *Kimura & Hurusawa* 23 (W--2126200), 33 (W--2126208). Iriomote: *Fosberg* 37769 (W--2647368); *Walker & Tawada* 6554 (W--2093836). Miyako: *Fosberg* 38479 (W--2647398). Okinawa: *Beauchamp* 924b (W--2620675); W. V. Brown 1600 (Au--165926); *Hatusima* 17242 (W--2243140); Herb. Boehmer & Co. 165 (N); *Koyama, Fukuoka, & Kato* 566 [Fl. Jap. Exsicc. 315] (Mu, N); R. Moran 4995 (W--2186505),

5055 (Ca--78640, W--2186552); Naito s.n. [March 19, 1927] (W--2071224); Nakamine & Moran 4995 (Bi, Ca--78457); A. R. Phillips 47 (W--2187039), 48 (W--2187040); E. H. Walker 7578 (W--2129644); Walker, Sonohara, Tawada, & Amano 7133 (N). Oshima: Faurie 3986 (V--5502). Shimoji: Okuhara & Sunagawa 109 (W--2647397). Taketomi: Fosberg 37604 (W--2647396). Island undetermined: C. Wright s.n. [Loo-Choo Islands] (T, W--66964). TAIWAN: A. Henry s.n. [Takow] (W--455116); Oldham 399 (T); Tanaka & Shimada 11030 (B, B, Go, La, Mi, Mu, N, S, W--1577466); E. H. Wilson 9867 (W--1052110); Yamamoto 1058 (N).

PHILIPPINE ISLANDS: Balabac: Ramos & Edaño, Herb. Philip. Bur. Sci. 49654 (Ca--359140), 49674 (Ca--359144, Mi). Batan: M. Ramos, Philip. Bur. Sci. 80192 (Bz--19598, Mi). Cuyo: Celestino, Herb. Philip. Bur. Sci. 10874 (Cm). Leyte: Glassman 807 (Ur). Luzon: Aheran's Collector s.n. [Merrill Dec. Philip. Fl. 146] (Du--9530, It, Mi, N, Os, W--1584129); Bacani, Herb. Philip. For. Bur. 16688 (L); M. S. Clemens 17299 (Ca--304012), s.n. [Olongapo, Mar. 1924] (Ca--247186); H. M. Curran, Herb. Philip. For. Bur. 6357 (Br), 16587 (L); Curran & Merritt, Herb. Philip. For. Bur. 8402 (Bz--19603); Elmer 8121 (L); Grbn-dahl s.n. [Manilla] (Ld--photo, N--photo, S); Lete 277 (Du--250180); Lohr s.n. [Rizal Prov., June 1913] (Ca--229194); E. D. Merrill 275 (Mu--4179, Ut--22407, W--1178288), 324 (W--435309), Sp. Blanc. 813 (Bz--19602, N, W--904495); M. Ramos, Herb. Philip. Bur. Sci. 7444 (L), 27654 (Bz--19601, W--1376047); Rothdauscher s.n. [Manilla 1879] (Mu--1614, Mu--1615); J. V. Santos 4333 (W--2246154); Udasco, Herb. Philip. For. Bur. 27298 (Bz--19600); R. S. Williams 321 (N, W--706937). Mindanao: DeVore & Hoover 157 (W--449646); Née 7 (Q); Wilkes, U. S. Expl. Exped. s.n. (T); R. S. Williams 3066 (N). Mindoro: Conklin, Philip. Nat. Herb. 18728 (W--2214847); M. T. Cruz 210 (Ur); E. D. Merrill 1233 (W--436203), 2392 (W--437348). Palmas: Mearns s.n. [Jan. 21, 1906] (W--1238342). Panay: E. B. Copeland 124 (W--850283); Ramos & Edaño, Herb. Philip. Bur. Sci. 31505 (Bz--19599); Servinas, Herb. Philip. Bur. Sci. 20669 (N, W--1238376). Papahag: S. Olsen 877 (Ac, Cp). Polillo: Salvoza 210 [Herb. Philip. For. Bur. 29662] (Ca--256973). Sulu: Herre 1246 in part (Ca--498212). Tumidao: Herre 1246 in part (Du--253260, Du--381305). Island undetermined: Née 4 (Q), 9 (Q), 10 (Q), 12 (Q), 20 (Q). MARIANA ISLANDS: Guam: D. Anderson 21 (Bi, N, W--2333169), s.n. [Nov. 1852] (S, S); R. H. Baker s.n. [May 6, 1945] (W--1863950); E. H. Bryan 1212 (Bi, Bi); M. Evans 215 (N, W--2633830, W--2633831), 1459 (N, W--2684560), 1556 (N, W--2684559), 1746 (W--2684558), 1817 (W--2684556); Fosberg 25396 (Bi, N, W--2332928), 43423 (W--2638407); Glassman 213 (Ur); J. Guerrero 708 (Bi); Hosaka 3137 (Bi, W--2333216); R. D. Knox 847 (Mi, W--1864823); Mc Gregor 463 (W--713124); G. C. Moore 177 (W--1863320), 188 (Mi), 835 (W--2876301); R. V. Moran 4367 (Bi, Ca--51846, Mi, W--2276368), 4550 (Bi, Ca--51954, Mi, W--2276435); W. L. Necker 31 (Bi), 38 (Ca--745140, W--1863967), 184 (Mi), 218 (W--1864025); P. Nelson 30 (Bi), 427 (N); Rodin 518a (Ca--789472); Safford & Seale 1010 (W--516012), 1076 (W--516078); R. L. Steere 43 (Mi, W--1864182), 123 (Mi, W--1864225); B. C. Stone 5078 (K1--5292); Swezey s.n. [June 16, 1936] (Bi); J. B. Thompson 141 (W--712638), 432 (N, W--712866). Pagan: Lamoureux 4867 (W--2784920); Raylerson 781 (W--2996833), 1066 (W--2925425). Rota: M.

Evans 1925 (N, W--2684557); Fosberg 24954 (Bi, W--2332902), 25126 (Bi, N, W--2332914). Saipan: *Courage* 68 (W--2638548); Fosberg 25270 (Bi, N, W--2332922); Hosaka 2988 (Bi, W--2333214); Kanehira 914 (Bi); W. H. Lange 21 (Bi); H. A. Stephens 56 (Ws). Sarigan: *Falanruw* 1730 (W--2684555). Tinian: *Hosaka* 2870 (Bi, N, W--2333208); *Schubel* 46 (Ur). PALAU ISLANDS: Anguar: Fosberg 25934 (Bi, N, W--2332956); St. John 21501 (Bi, W--2064511). Arakabesan: *Takamatsu* 1260 (Bi). Babelthuap: *Emmons* 78 (W--2684554); Fosberg 32387 (Bi, N, W--2333093); *Salsedo* 123 (N, W--2684552). Koror: *Canfield* 623 (W--2878764). Palau: *Herre* 45 (Bi, Du--336919, N); Kanehira 1991 (N). Peleliu: *Canfield* 427 (W--2839193); Fosberg 47648 (N). Ulithi: *Lessa* 21 (Bi). Yap: *Cushing* 417 (W--2684556), 441 (K1--8383, W--2684549), 468 (W--2684548); *Cushing & Mitag* 546 (W--2684551); Fosberg 25570 (Bi, N, W--2332948); *Hosokawa* 8952 (Bi); Kanehira 1252 (Bz--19681); *Takamatsu* 1871 (Bi, Ca--805769); *Wong* 521 (Bi, W--2092282). GREATER SUNDA ISLANDS: Amsterdam: *Hoogerwerf* 24 (Bz--19504). Babi: *Boerlage* s.n. (Bz--19484, Bz--19485). Bangko: *Baeker* 29229 (Bz--19536). Batu: *Raup* 94 (Bz--19642), 689 (Bz--19641). Bintan: *Bunnemeijer* 6110a (Bz--19658), 6245 (Bz--19661), 6342 (Bz--19660). Celebes: *Kaudern* 201 (N); *Kjellberg* 66 (Bz--19622, S), 71 (Bz--19621, S); *Koorders* 19504b [3648] (Bz--19619, Bz), 19505b [2069] (Bz--19618), 19506b [2796] (Bz--19617), 19512b [284] (Bz--19615, Bz--19616); *Lam* 2683 (Ut--2409A); *Meijer* 10114 (W--2995311); *Noerkas* 403 (Bz--19612, Bz--19613), 409 (Bz--19610, Bz--19611); *Posthumus* 2664 [664] (Bz--19605); *Rachmat* 179 (Bz--19606, Bz--19607), 342 (Bz--19608, Bz--19609), 809 (Bz--19620); *Teijsmann* 12108 (Bz--19614). Dapoer: *Van Steenis* 4467 (Bz--19489). Doerian: *Raihmet* 37 (Bz--19659). Edam: *Baeker* 30948 (Bz--19493), 32009 (Bz--19490, Bz--19491); *Boschma* 28 (Bz--19477), 33 (Bz--19476), 91 (Bz--19478), 224 (Bz--19479). Gelean: *Karta* 348 (Bz--19542). Haarlem: *Van Steenis* 6810 (Bz--19511). Java: N. J. Andersson s.n. [Febr. 1853] (S, S); *Baeker* 1453 (Bz--19494), 3904 (Bz--19515), 4567 (Bz--19497), 4689 (Bz--19495), 7204 (Bz--19465), 7584 (Bz--19513), 11789 (Bz--19502), 12958 (Bz--19512), 15523 (Bz--19499), 16347 (Bz--19500), 16713 (Bz--19501), 17797 (Bz--19514), 23328 (Bz--19498), 24382 (Bz--19518), 24653 (Bz--19516, Bz--19517), 32934 (Bz--19466), 32935 (Bz--19467, Bz--19468); *Bakhuizen* 2028 (Bz--19473), 2369 (Bz--24887a); *Bijouwer* 192 (Bz--19480); *Boerlage* 7* (Bz--19481); *Buwalda* 7174 (Bz--72902); *Collector undetermined* s.n. (Bz--26323); *Decaisne* s.n. [1816] (Du--166598); *Dorgelo* 85 (Bz--19529); *Hallier* 145 (Bz--19472), s.n. [22.IV.1895] (Bz--19469, Bz--19470), s.n. [15.II.96] (Bz--19471); *Hochreutiner* 1136 (Ca--41362), 2089 (Ca--41423); *Hoed* 23 (Bz--19461); *Hoogerwerf* 30 (Bz--19460), 34 (Bz--19462), s.n. [2.8-1936] (Bz--19464); *Kollmann* s.n. (X); *Koorders* 20648b [1103*] (Bz--19527), 22068b (Bz--19519), 22112b [106*] (Bz--19522), 27519b [504*] (Bz--19523), 29050b [1197*] (Bz--19526), 29969b [1753*] (Bz--19528), 36603b (Bz--19520), 36853b [1109*] (Bz--19521), s.n. [10.I.86] (Bz--19507); *Kuntze* 4247 (N); *Leeuwen-Reijnvaan* s.n. [10 Aug. 1909] (Bz--19506); *Lbrzing* 570 (Bz--19509); *Rant* 1077 (Bz--19474); *Slooten* 2040 (Bz--19463), 2450 (Bz--19496), 2684 (Bz--19503); *Teijsmann* 2918 (Ut--43907), s.n. (Ut--43908); *Ultee* 206 (Bz--19488); *Valeton* s.n. [28 Jan. 1905] (Bz--19482); *Van Steenis* 547 (Bz--19505 in part), 577 (Bz--

19505 in part); *Wanman* s.n. (S); *Wolff von Wulffing* W.61 (Bz--19510); *Zollinger* 2891 (X). Kalimantan: *Dunselman* 163 (Bz--19437); *Hallier* B.261 (Bz--19439); *Mol* 152 (Bz--19438). Kambangan: *Berger* 290 (Bz--19508). Kangean: *Backer* 26783 (Bz--19532), 27651 (Bz--19535), 28025 (Bz--19531). Karakalang: *Lam* 2683 (Bz--19623, Bz--19624). Karimandjawa: *Karta* 316 (Bz--19544); *Koorders* 40697b [110] (Bz--19525), 41127b (Bz--19524). Karimata: *Mondi* 140 (Bz--19440, Bz--19441, N, Ut--34074A). Kamoedjan: *Karta* 397 (Bz--19543). Klein Kombuis: *Backer* 31040 (Bz--19492); *Lam* 2179 (Bz--19475). Krakatoa: *Amdjah* 50 (Bz--19649, Bz--19650, Bz--19651); *Backer* 35395 (Bz--19647), 35397 (Bz--19646); *Beume* A.204 (Bz--19644); *Fosberg* 44561 (W--2681696); *Leeuwen-Reijnvaan* 3529 (Bz--19643). Labuan: *Baker & Baker* s.n. [Jan. 28, 1915] (Gg--32040). Lang: *Greshoff* s.n. (Bz--19483). Lingga: *Blnnemeijer* 7020 (Bz--19654, Bz--19655). Madura: *Backer* 19095 (Bz--19546), 19195 (Bz--19547); *Hofstee* 87 (Bz--19545). Mamboerit: *Backer* 27278 (Bz--19538, Bz--19539). Paliat: *Backer* 29477 (Bz--19537). Paniki: *J. J. Smith* 13 (Bz--19486, Bz--19487). Prinsen: *Bonssum Waalkes* 665 (Ba, N, Ng--16873). Sabah: *Baker & Baker* s.n. [Jan. 26, '15] (Gg--32039). Satoenting: *Backer* 29738 (Bz--19530). Saoebi: *Backer* 28262 (Bz--19534). Sarawak: *W. M. A. Brooke* 8101 (W--2319574); *Carrick & Enoch* JC.320 (K1--3303); *Native Collector* 1175 (Ph), 2208 (Ph). Sas-eel: *Backer* 28698 (Bz--19540, Bz--19541). Sebangka: *Blnnemeijer* 7480 (Bz--19652). Sedanau: *Van Steenis* 1078 (Bz--19657). Sepapan: *Backer* 28465 (Bz--19533). Simalur: *Achmad* 246 (Bz--19663, Ut--52475), 826 (Bz--19662). Singkep: *Blnnemeijer* 7243 (Bz--19653). Sumatra: *Forbes* 1802 (Vu); *Hamel & Toroes* 1302 (Mi); *Leeuwen-Reijnvaan* 3140a (Bz--19625); *Lbrzing* 3236 (Bz--19626), 3832 (Bz--19627), 9288 (Bz--19628); *Meer Mohr* 9 (Bz--19629); *Van Steenis* 35 (Bz--19631); *Voogd* 1107 (Bz--19632); *Vates* 936 (Ca--234095, Mi), 937 (Ca--234078), 1115 (Bz--19633, Bz--19634, L, Mi). Temaja: *M. R. Henderson* 20299 (Bz--19656). Verlaten: *Backer* 35396 (Bz--19648); *Boedijn* 2953 (Bz--19645). LESSER SUNDA ISLANDS: Bali: *Van Steenis* 7586a (Bz--19548); *Voogd* 1684 (Bz--19549). Banka: *Blnnemeijer* 1478 (Bz--19637), 1937 (Bz--19636), 2466 (Bz--19635, Bz--25517). Lombok: *Wallace* s.n. [1856] (F--404441). Savoe: *Bloenbergen* 3288 (Bz--72639). Sebesi: *Leeuwen-Reijnvaan* 5193 (Bz--19630). Sumbawa: *Bloenbergen* 3078 (Bz--72638); *Posthumus* 3020 (Bz--19550). Timor: *Herb. Torrey* s.n. (T). MOLUCCA ISLANDS: Amboina: *Binnendyk* s.n. [Ambon] (Bz--19558, Bz--19559); *Boerlage* 139 (Bz--19560, Bz--19561), 375 (Bz--19553, Bz--19554), 562 (Bz--19555, Bz--19556); *Rant* 282 (Bz--19551), 508a (Bz--19557); *C. B. Robinson* 297 (Bz--19552, N, W--654615); *Teijsmann* s.n. [Ema, June] (Bz--19564, Bz--19565); *Treub* 361 (Bz--19562, Bz--19563). Ceram: *Buwalda* 6033 (Bz--72949); *Kornassi* 440 (Bz--19566, Ut--80826), 769 (Bz--19569, Ca--265972, Ut--80824), 901 (Bz--19567, Bz--19568, Ca--236049, Ut--80825); *Teijsmann* 5020 H.B. (Bz--19570). Halimahera: *Anang* 416 (Bz--72993), 573 (Bz--72992). Jamdena: *Buwalda* 4454 (Bz--72574); *Pleyte* 160 (Ba). Key: *Jaheri* 196 (Bz--19571, Bz--19572). Mysole: *Teijsmann* s.n. [Mysoli waigama] (Bz--19591). Sanana: *Bloenbergen* 4390 (Bz--19573). Ternate: *Bequin* 934 (Bz--19576), 1659 (Bz--19574), (Bz--19575). AROE ISLANDS: Kobroör: *Buwalda* 4982 (Bz--72738). CAROLINE ISLANDS: Carol: *Kanehira* 150 (Bi). Dublon: *Fosberg* 24545 (Bi,

N, W--2332881); *Takamatsu* 148 (Bi). Falalis: *Alkire* 91 (W--2669075). Hare: *Fosberg* 26078 (Bi, W--2332964); *Hosaka* 3439 (Bi, W--2333224). Ifaluk: *Abbott* & *Bates* 25 (Bi). Kaujema: *Hosaka* 3463 (Bi, N, W--2333227). Kusaie: *Takamatsu* 374 (Bi). Kutu: *D. Anderson* 1206 (Bi, N, W--2242643). Lamotrek: *Fosberg* & *Evans* 46797 (N, W--2717851). Lukunor: *D. Anderson* 2187 (Bi, N, W--2242733). Moch: *D. Anderson* 973 (Bi, N, W--2242534). Moen: *D. Anderson* 725 (Bi, N, W--2333190); *Hosaka* 2774 (Bi, N, W--2333203). Narlap: *Hosaka* 3569 (N, W--2333230). Nukuoro: *Carroll* 27 (W--2684380), 84 (W--2684370). Nunakita: *Fosberg* 26141 (Bi, N, W--2332968). Peleliu: *Fosberg* 25999 (Bi, N, W--2332959) 47648 (W--2684505). Pingelap: *St. John* 21472 (Bi). Pis: *M. Evans* 815 (W--2684683); *Fosberg* 24646 (Bi, N, W--2332886). Ponape: *Fosberg* 26326 (Bi, N, W--2332974); *Glassman* 2464 (Bi, W); *Hosaka* 3569 (Bi); *Riesenberg* 61 (Bi); *Salomon, George, & George* 16 (W--2633741). Satawal: *Fosberg* 46852 (W--2684503). Sinukutai: *Fosberg* 26171 (Bi, N, W--2332971). Sonsorol: *P. T. Berry* 63 (W--2684553). Ta: *D. Anderson* 1075 (Bi, N, W--2242604). Tol: *Hosaka* 2730 (Bi, N, W--2333199); *Takamatsu* 28 (Bi). Truk: *Hosokawa* 6544 (Bi); *Pelzer* 25 (W--2432050), 50 (W--2431386); *Spence* 435 (W--2963758); *Wong* 119 (Bi, W--2608458). Uoala: *H. F. Moore* 121 (W--419856). Utapel: *Wong* 6 (Bi, N). Watahai: *Fosberg* 47074 (W--2684504). Woleai: *Wong* 6 (W--2333231). MARSH-ALL ISLANDS: Ailuk: *Fosberg* 33945 (Bi, N, W--2212037). Bikajle: *Fosberg* 26803 (Bi, N, W--2332993). Bikini: *W. R. Taylor* 46-1073 (Bi, Ca--909264, Mi, S, W--1864437), 46-1137 (Ca--909221, Mi, S, W--2063929), 46-1172 (Ca--909265, Mi, N, S, W--2063942). Dalap: *Fosberg* 26904 (Bi, N, W--2332999). Ebeye: *Fosberg* 31213 (Bi, N, W--2333016). Eniwetok: *W. R. Taylor* 46-1367 (Ca--909284, Go, Mi, S, W--2063982), 46-1480 (Go). Imruj: *Fosberg* 26733 (Bi, N, W--2332988). Ine: *D. Anderson* 3617 (Ba, Bi, N, W--2242776); *Hatheway* 775 (Bi, W--2243018); *E. L. Stone* 1009 (W--2242908). Jemo: *Fosberg* 33867 (Bi, W--2211980). Kwajalein: *Fosberg* 26468 (Bi, W--2332977). Lado: *Fosberg* 33846 (Bi, N). Lae: *Fosberg* 34067 (Ba, Bi, N, W--2212107). Likiep: *Fosberg* 27008 (Bi, N, W--2333006), 33846 (W--2211977). Mellu: *W. R. Taylor* 46-1493 (Mi, S, W--1864546). Rongelap: *W. R. Taylor* 46-1400 (Bi, Ca--909295, Mi, Mi, S, W--2063989), 46-1480 (Mi, W--1864540). Sifo: *Fosberg* 36697 (Bi, W--2399787). Ujelang: *Fosberg* 34186 (W--2212165). Utirik: *Fosberg* 33673 (Ba, Bi, N, W--2211893). Wotho: *Fosberg* 34229 (Bi, W--2399665). KAPINGAMARANGI ISLANDS: Werua: *Niering* 540 (W--2585244A), 579 (W--2585173A), 644 (W--2575089A), 645 (W--2575087A). GILBERT ISLANDS: Aonteuma: *Moul* 8080 (N). Bikenibeu: *Herbst & Allerton* 2691 (W--2685486). Butaritari: *Herbst & Allerton* 2740 (W--2685516). Tabiteuea: *Luomala* 16 (Bi, Bi). NAURU ISLAND: *Fosberg* 58664 (W--2882942) PHOENIX ISLANDS: Canton: *Fosberg & Stoddart* 54776 (W--2680453). NEW GUINEA: Papua: *Brass* 853 (Bz--19579), 1181 (Bz--19578), 1548 (Bz--19577), 21711 (Ng--17097), 21834 (Ng--17094, W--2364155); *Chalmers s.n.* [S.E. New Guinea 1878] (Mb), *s.n.* [New Guinea 1880] (Mb); *J. W. R. Koch s.n.* (Bz--19584, Bz--19585); *W. MacGregor s.n.* [near Dutch boundary 1890] (Mb), *s.n.* [1890] (Mb); *F. Mueller* 8 (Mb), 46 (Mb), *s.n.* [Fly River 1890] (Mb); *Schodde & Craven* 4474 (W--2896056); *Womersley & Simmonds* 5049 (Ng--16923). Territory of New Guinea: *Hartley TGH.9741* (Mi); *Henty & Frodin NGF.27267* (N); *Hollrung* 42 (Bz--19590,

L, Mb). West Irian: Aet 613 (Bz--72950); Boldingh 153 (Bz--19581); Boschproefstation 20 (Bz--19592); Brandenhorst 153 (Bz--25516, Bz--25518, Ut--13805); Feuilletau des Bruyn 272 (Bz--19595), 337 (Bz--19594); Gjellerup 292 (Bz--19596 in part, Bz--85749), 292a (Bz--19596 in part); Jaheri s.n. [11-4-1901] (Bz--19588), s.n. (Bz--19589); Janowski 485 (Bz--19587), 526 (Bz--19586); McKee 1682 (Ng--16857), 1683 (Ng--16877), 1685 (Ng--16876); Peekel 30 (Bz--19593); Pleyte 364 (Bz--72863, Bz--72864, Ng--16848); Rbmer 18 (Bz--19597); Royen 3355 (Ng--20220); Versteeg 1007 (Bz--19580), 1840 (Bz--19582, Bz--19583, Ut--13810). NEW GUINEAN ISLANDS: Los Negros: Streiman & Stone LAE. 53607 (Kl--14614). Misima: Brass 27592 (S, W--2408712). Radack: Chomipod s.n. [Jan. 1817] (L); Eschscholtz s.n. (L). Saibai: C. Stewart s.n. (Mb). Sudest: Brass 28113 (W--2409054). Uramu: Gray & Floyd 8008 (Ng--16890). Yule: F. Mueller 22 (Mb). BISMARK ARCHIPELAGO: Mussau: K  ie & Olsen 1668 (Ac, Cp). New Britain: Croft & Katik NGF.15529 (Mu); Dissing 2591 (Ac, C, Cp); Floyd 6455 (Ng--16971). SOLOMON ISLANDS: Bougainville: Kajewski 2244 (Bi, Bz--19675, Bz--19677). Guadalcanal: Kajewski 2407 (Bi, Bz--19676, Bz--19678). New Georgia: Maunu'u s.n. [Brit. Solom. Isl. Prot. 6111] (W--2578577). Island undetermined: Kusche s.n. [Nov. 1--Dec. 28, 1920] (Gg--34496). NEW HEBRIDES: Efate: Kajewski 185 (N). NEW CALEDONIAN ISLANDS: Maitre: MacDaniels 2152 (Ba). New Caledonia: Balansa 413 (B, Ca--54164); Deplanche 1049 (L); Franc 1122 (S), s.n. [Prony] (Ca--314426, W--1372313); McKee 2110 (W--2187227); Pancher s.n. [1870] (L); Schlechter 15289 [Herb. Hort. Then. 1.6401] (Br). FIJI ISLANDS: Fungula: A. C. Smith 1187 (Bi, Ca--601469, N, S, W--1676772). Kambara: H. F. Moore 21 (W--419762). Kandavu: A. C. Smith 318 (Bi, Ca--601028, N, S, W--1676583). Koro: A. C. Smith 1091 (Bi, Ca--602117, N, S, W--1676738). Moala: E. H. Bryan 338 (Bi). Ongea Levu: E. H. Bryan 432 (Bi). Ovalau: J. W. Gillespie 4492 (Bi, Bi, Ca--448748, N); A. C. Smith 8092 (Ld). Vanua Levu: Degener & Ordenez 14154 (Bi, Ca--16722, N, N, S, Vi), 14191 (Bi, Ca--16708, N, N, S, Vi); A. C. Smith 6611 (Bi, N, N, S). Vanua Mbalavu: A. C. Smith 1433 (Bi, N). Viti Levu: E. H. Bryan 192 (Bi); O. Degener 14958 (Bi, N, N); J. W. Gillespie 2068 (B, Bi, Ca--447704, W--159956); W. H. Harvey s.n. (K); MacDaniels 445 (Ba), 1009 (Bi); Meebold 8235 (Mu), 16496 (Mu); Seemann 353 (Lu); A. C. Smith 9506 (Hk); Tothill & Tothill 670 (Bi); J. M. Valentine 9 (Bi). TONGAN ISLANDS: Eua: Yuncker 15526 (Bi, Ss, W--2129351, Yu). Lifuka: Yuncker 15760 (Bi, Ss, W--2129445, Yu). Nomuka: Yuncker 15844 (Bi, Ss, W--2129483, Yu). Tongapatu: Banks & Solander 1769 (W--1276793); McKern 102 (Bi); Setchell & Parks 15201 (Ca--297669), 15246 (Ca--297661), 15253 (Bi, Ca--296885, W--1550481), 15154 (Ca--296859), 15256 (Ca--296888), 15333 (Ca--296838), 15337 (Ca--297535), 15342 (Ca--296985), 15570 (Ca--297153); Wilkes, U. S. Expl. Exped. s.n. [Friendly Islands] (N, W--75175); Yuncker 15018 (Bi, Ss, W--2129148, Yu), 15170 (Bi, Ss, W--2157592, Yu). AUSTRALIA: New South Wales: Herb. Prager 18680 (Gg--32011). Northern Territory: Holtze 91 (L), s.n. [Herb. Prager 18686] (Gg--32015), s.n. (Cm); F. Schultz 520 (L); Specht 945 (W--2125059), 1193 (W--2125239). Queensland: Bowman s.n. (Sg--16048); R. Brown s.n. (L); Brass 2347 (B, Bi); Du Rietz 4437 (Go, S); Flecker 988 (Qu); Michael 584 (Bz--19683); F. R. Morris

8709 (Qu); Storr 12973 (Go). GREAT BARRIER REEF: Coombe: Stoddart 4019 (W--2759667). Eagle: Stoddart 4806 [Queensl. Herb. AQ0014729] (W--2759564). East Hope: Stoddart 4441 (W--2759715). Green: Cummings s.n. [17/1/1937] (Go); Stoddart 4237 (W--2759908). Green Ant: Stoddart 4334 (W--2759508). Lizard: Fosberg 54986 (W--2759998), 54994 (W--2739044). Morris: Stoddart 4965 (W--2744186). Newton: Stoddart 4129 (W--2759772). Palm: Bancroft s.n. (Bz--19682). Pipon: Stoddart 4890 [Queensl. Herb. AQ0014771] (W--2744028). Saunders: Stoddart 5077 [Queensl. Herb. AQ0014893] (W--2744226). Three Isles: Stoddart 4507 (W--2759898). Two Isles: Stoddart 4645 [Queensl. Herb. AQ0014834] (W--2759834). HAWAIIAN ISLANDS: Oahu: Grenzell s.n. [Honolulu, June 1927] (S). SAMOAN ISLANDS: Namua: Whistler W.1882 (W--2728144). Ofu: Yuncker 9562 (Bi, Dp--28987). Savaii: Bristol 2343 (W--2675676); E. Christophersen 2783 (B, Bi, Ca--592215, Ca--948912, N), 2868 (Bi, W--1967870); Christophersen & Hume 2006 (B, Bi, Bz--19679, Ca--592214, N, W--1655718), 2381 (Bi), 2453 (Bi), 2496 (Bi); Vaupel 99 (Bi, Ca--882454, Mu, W--1378558); A. K. Walker s.n. [31-XII-1968] (W--2659994). Tau: D. W. Garber 584 (Bi, Ca--592217), 694 (Bi, N, N); Whistler W.1332 (W--2728235); Yuncker 9096 (Bi, Dp--28988). Tomenua: C. Weber s.n. (Mu--1616). Totuila: Diefenderfer 14 (Bi); D. W. Garber 963 (Bi); Herb. Crooke s.n. (N); Kuntze 23014 (N); Meebold 26583 (Mu); Seale s.n. [May 20, 1929] (Gg--176104); W. A. Satchell 97 (Bi, Ca--216013), 292 (Ca--216014, W--1271154); Whistler W.2836 (W--2996142); Wilder 74 (Bi); Wisner 22 (Bi); Yuncker 9369 (Bi, Dp--28991). Upolu: Bristol 1997 (K1--10581, W--2675819), 2383 (W--2675690); E. Christophersen 478 (Bi, Bz--19680, W--1704028); Eames 1 (B, Bi, Ca--592216, N, W--1704027); Rechinger & Rechinger 1278 (W--1718743); Reinecke 174 (Bi, X), 547 (Bi, Bz--19684, X); Wilder 428 (Bi). NIUE: Yuncker 9733 (Bi, Dp--28982, Mi), 9814 (Bi, Dp--28981), 10042 (Bi, Dp--28983, W--1968002), 10218 (Bi, Ca--948851, Dp--28985). LINE ISLANDS: Christmas: C. R. Long 3487 (W--2659710). Fanning: C. R. Long 3546 (W--2659709), 3570 (W--2659711). Hull: C. R. Long 2008 (W--2659719). Sydney: C. R. Long 2592 (W--2659718). Washington: Herms & Kirby s.n. [May--Sept. 1924] (Ca--237706); C. R. Long 1866 (W--2659708). CULTIVATED: Austria: Boos s.n. (V, V); Herb. Endlicher s.n. (V); Herb. Hort. Bot. Schönbrunn s.n. (V); Herb. Portenschlag s.n. (V); Herb. Reichenbach f. s.n. (V, V, V, V); Herb. Trattinnek s.n. (V); Herb. Univ. Ludw. Maximil. s.n. (Mu--805). Barbados: Lane 627 (Ed). Belgium: Herb. Martius s.n. [H. B.] (Br); Herb. Pollart de Canidri s.n. (Br); Lejeune s.n. (Br); Nyst s.n. (Br). Brazil: Glaziou 14163 (Cb, Cb, Cp, K, L, Ld--photo, N, N--photo); Rudio 133 (N). Canton Island: Fosberg 55720 (W--2785010). Cape of Good Hope: Herb. Capetown Bot. Gard. 34 (S). Cuba: C. Wright s.n. [Herb. Sauvalle 1780 in part] (Hv, Hv), s.n. [Herb. Sauvalle 1781½] (Hv), s.n. [cult.] (G). Denmark: Herb. Liebmann s.n. (Cp); Herb. Rottbøll s.n. (Cp). Egypt: Boulos s.n. [July 1952] (Gz), s.n. [25/9/1952] (Gz), s.n. [Doqqi] (Gz); Mahdi s.n. [12/7/1964] (Gz, Gz, Gz, Gz); V. Therkholm s.n. [31/7/1959] (Gz), s.n. [22/9/1959] (Gz), s.n. [29/10/1959] (Gz), s.n. [30/10/1959] (Gz). England: Herb. Hort. Kew s.n. [Jun3 1888] (K, K). Fanning Island: Fosberg 11000 (W--2645426). Florida: R. A. Young s.n. [F.H.B.39192; S.P.L.52421] (Ar--3292, Ar--19836). France:

Dunn s.n. [Hort. Monsp.] (L); Herb. Hort. Bot. Paris s.n. [1846] (Cb), s.n. (Br, Cb, K, Ld--photo, N--photo, S); Herb. Hort. Monspel. s.n. [Aug. 1847] (Br), s.n. (K); Herb. Jard. Bot. de Cels s.n. [20 Sept. 1818] (K); Herb. Jard. des Plantes s.n. [7 Sept. 1822] (K); Mühlenbeck s.n. [Hort. Baumann 1834] (M); Perrottet s.n. [Jard. des Plant. Paris 1818] (Cb); Robert s.n. [Hort. Telon. 1807] (L). Germany: Herb. Bernh'rdi s.n. [H. Erf.] (B); Herb. Braun s.n. (L); Herb. Hort. Bot. Berol. s.n. [Juni 1904] (B), s.n. [1804] (Le), s.n. (B, B); Herb. Hort. Bot. Monac. s.n. [6.VIII.1849] (Mu--806); Herb. Reichenbach f. s.n. [H. B. Berol. 1803] (V); Herb. Sprengel s.n. (B); Herb. Zuccarini s.n. [H. B. Monac. 1824] (Mu--808); Hiendlmayr s.n. [ex horto Breiteriano] (Mu--1403); Kreuzpointner s.n. [Hort. Bot. Monac. 13 Oct. 1859] (Mu--807); Rühlmann 1794 (B); Schreber s.n. (Mu--804); Wahlberg s.n. [Ludwigsburg] (S). Gilbert Islands: Moul 8298 (Bi, W--2245977). Guam: M. Evans 1697 (W--2684561). Hawaiian Islands: Wawra 2503 (V). India: Gamble 17633 (K), 21790 (K); Herb. T. Cooke s.n. [College Bot. Gard. Poona, Aug. '92] (Mi, Pa); Herb. Hort. Bot. Calcutt. s.n. (K, K, Le, Le, Mu--811, Mu--1150, N, W--2497129); Herb. Hort. Bot. Seramp. s.n. (Cp); Herb. Pierre s.n. [Cult. in Hort. Bot. Calcutt.] (B); Shih 6524 (Xa); Shivaraman s.n. [10.12.74] (Ld); T. Thomson 216 (K); Wallich 818 in part (Bm, Cp), 1788/D (B), 1789/3 (K, L), s.n. (Cp). Italy: Paperini s.n. [Pisa 1814] (Ld--photo, N--photo, S). Jamaica: March 1732 (K). Java: Herb. Hort. Bot. Bogor. 198 (Bz--19457), 18615 (Bz--19442), 19664 (Bz), II.Q.C.10 (Bz--25755), X.F.10 (Bz--19446, Bz--25511, Bz--25512), 10a (Bz--19444, Bz--19445), X.F.18 (Bz--25556), X.F.20 (Bz--19447, Bz--19448, Bz--25513), X.F.21 (Bz--19449, Bz--19450, Bz--19451, Bz--19452, Bz--25514, Bz--25557), XI.G.71a (Bz--19453, Bz--19454, Bz--25515), XI.G.90a (Bz--25794, Bz--26537), XI.G.93a (Bz--25797, Bz--25798, Bz--26594), XV.F.15 (Bz--26316, Bz--26317), XV.F.15a (Bz--19443), XV.F.16 (Bz--19459), XV.F.16a (Bz--19458), XV.F.17 (Bz--26321), XV.F.18 (Bz--26322), XV.F.18a (Bz), XV.F.28 (Bz--26336, Bz--26342, Bz), s.n. (Bz--19455, Bz--19456); Teijsmann s.n. [Hort. Bot. Bogor. 1860] (Le), s.n. [Hort. Bot. Bogor. 1867] (Le, Le). Martinique: Duss 4444 (B). Natal: J. M. Wood s.n. (Na--9890). Netherlands: Herb. Mus. Bot. Acad. Rheno-Traiect. s.n. (Ut); Herb. Lugd.-Bat. 908.266-81 (Le), 908.266-82 (Le), 908.266-87 (Le), 908.266-88 (Le), 913.13-119 (Le). New York: Eftyhetes, N. Y. Bot. Gard. Cult. Pl. 14737 (N); Hartling, N. Y. Bot. Gard. Cult. Pl. 14737 (Ur, Ur); N. Taylor, N. Y. Bot. Gard. Cult. Pl. 14737 (N). Pakistan: Hussain s.n. [18.10.1957] (Kh); Qureshi s.n. [14.11.1965] (Kh); Salim s.n. [Peshawar, 5/6/71] (Mu); Zaidi s.n. [15.1.1958] (Kh). Réunion: Boivin s.n. [15 Avril 1847] (P). Russia: Collector undetermined s.n. [C.1859] (L); F. Fischer s.n. (S); Herb. Fischer s.n. (L, L); Herb. Hort. Bot. Imp. Pet. Mag. s.n. [1835] (L), s.n. (L); Herb. Stephan 802 (L); C. A. Meyer s.n. (L). Saudi Arabia: M. L. Grant 16824 (E--2144214); R. S. Mathews s.n. [Daharan, November 9, 1954] (Hk). Scotland: R. Brown s.n. [Edinb. Bot. Gard.] (Br); Herb. Roy. Bot. Gard. Edinb. s.n. (L). Sri Lanka: Moldenke, Moldenke, & Jayasuriya 28171 (W--2764430). Switzerland: Collector undetermined s.n. (X); Delessert s.n. [Jard. 1 Juillet] (Dc); Herb. Hort. Valde Grace s.n. (Du). Taiwan: Faurie 28 (V). Thailand: Sørensen, Larsen,

& Hansen 7297 (Cp). Torrutz Island [Marshall Islands]: E. H. Bryan s.n. [Aug. 14, 1944] (Bi). LOCALITY OF COLLECTION UNDETERMINED: N. J. Andersson s.n. [Ocean. (Fona)] (S, S); Collector undetermined 273 [Kerepuna] (Mb), s.n. [B.G.K. 29.7.50] (S), s.n. [East Indies] (Cp); Gardner 21 [Minikoi] (Pd); Garrigues s.n. (Mi); Herb. Mertens s.n. [1801] (L); Herb. Osbeck s.n. (S, S); Herb. Schrader s.n. (L); Herb. Swartz s.n. (S); Herb. J. Torrey s.n. (T); Heyne s.n. [2nd March '98] (L); Née 6 (Q), 8 (Q), 21 (Q); Osbeck s.n. [East Indies] (S); Sparrman 14 (S). MOUNTED ILLUSTRATIONS & CLIPPINGS: Arachi, Pict. Present. Indian Fl. 160, fig. 162. 1968 (Ld); Arulchelvam, Ceyl. Forester, ser. 2, 8: 83. 1968 (Ld); Corner & Watanabe, Illust. Guide Trop. Pl. 755. 1969 (Ld); Duke & Ayensu, Med. Pl. China 2: 637. 1985 (Ld); M. R. Henderson, Malay. Wild Fls. Dicot., imp. 2, 385, fig. 356 A & B. 1974 (Ld); Hsiao, Fl. Taiwan 4: 422, pl. 1058. 1978 (Ld); Itô, Taiwan Shokubutu Dzusetu pl. 602. 1928 (Ld); Jacq., Collect. Suppl. pl. 4, fig. 1. 1796 (Ld); Walden, Wild Fls. S. China pl. 43, fig. 111. 1984 (Ld); E. H. Walker, Fl. Okin. South. Ryuk. 892. 1976 (Ld).

CLERODENDRUM INERME var. *MACROCARPUM* (Wall.) Mold., Phytologia 22: 6. 1971.

Synonymy: *Clerodendron neriifolium* var. *macrocarpa* Wall. ex C. B. Clarke in Hook. f. Fl. Brit. India 4: 589. 1885.

Bibliography: C. B. Clarke in Hook. f., Fl. Brit. India 4: 589. 1885; Anon., Kew Rec. Tax. Lit. 1971: 270. 1971; Mold., Fifth Summ. 2: 867, 969, & 971-972. 1971; Mold., Phytologia 22: 6. 1971; Hocking, Excerpt. Bot. A.21: 30. 1972; Mold., Biol. Abstr. 54: 6295. 1972; Mold., Phytol. Mem. 2: 272, 387, & 538. 1980; Brenan, Ind. Kew. Suppl. 16: 71. 1981; H. N. & A. L. Mold. in Dassan. & Fosb., Rev. Handb. Fl. Ceyl. 4: 451. 1983.

This variety differs from the typical form of the species chiefly in its mature fruits being about 3.2 cm. long and 1.9 cm. wide, rather than 1--1.8 cm. long and 6--8 mm. wide as in the typical form.

The original description given by Clarke (1885) is: "Var. *macrocarpa*, Wall. ms.; drupe $1\frac{1}{2}$ by $\frac{3}{4}$ in. -- Martaban; Wallich. Rangoon; McLelland." Both these localities are in Burma and the variety seems to be endemic there, although some authors imply that the larger fruit is characteristic of all of the material included under the name *C. neriifolium* Wall., but this is definitely contradicted both by Wallich and by Clarke.

Nothing is known to me about his variety beyond what is here stated.

CLERODENDRUM INERME f. *PARVIFOLIUM* Mold., Phytologia 32: 46. 1975.

Synonymy: *Volkameria buxifolia* Willd., Enum. Pl. Hort. Berol. 2: 658. 1809. *Volkameria ligustrina* var. *rotundifolia* Gmel. ex Steud., Nom. Bot. Phan., ed. 1, 889 in syn. 1821. *Clerodendron buxifolium* (Willd.) Spreng. in L., Syst. Veg., ed. 16, 2: 758. 1825. *Clerodendron buxifolium* Spreng. ex Sweet, Hort. Brit., ed. 1, 322. 1826. *Clerodendron buxifolium* Sm. ex Loud., Hort. Brit., ed. 1, 247. 1830. *Clerodendron buxifolium* Spreng. apud Schau. in A. DC., Prodr. 11:

660 in syn. 1847. *Clerodendron emarginatum* Briq., Bull. Herb. Boiss., ser. 1, 4: 348. 1896. *Clerodendrum buxifolium* (Willd.) Spreng. ex Mold., Prelim. Alph. List Inv. Names 19. 1940. *Clerodendrum emarginatum* Briq. ex Mold., Suppl. List Inv. Names 2 in syn. 1941. *Citharexylum emarginatum* Briq. ex Mold., Suppl. List Inv. Names 2 in syn. 1941 [not *Citharexylum emarginatum* Vahl, 1940]. *Citharexylum emarginatum* (Willd.) Spreng. ex Mold., Suppl. List Inv. Names 2 sphalm. 1941. *Citharexylum buxifolium* (Willd.) Spreng. ex Mold., Suppl. List Inv. Names 2. 1941. *Clerodendron buxifolia* Willd. ex Mold., Résumé 261 in syn. 1959.

Bibliography: Willd., Enum. Pl. Hort. Berol. 2: 658. 1809; Steud., Nom. Bot. Phan., ed. 1, 889 & 890. 1821; Link, Enum. Hort. Berol. 2: 127. 1822; Spreng. in L., Syst. Veg., ed. 16, 2: 758. 1825; Sweet, Hort. Brit., ed. 1, 1: 322. 1826; Loud., Encycl. Pl. 522. 1829; Loud., Hort. Brit., ed. 1, 247. 1830; Sweet, Hort. Brit., ed. 2, 415. 1830; Loud., Hort. Brit., ed. 2, 247. 1832; G. Don in Loud., Hort. Brit., ed. 3, 247. 1839; G. Don in Sweet, Hort. Brit., ed. 3, 550. 1834; Steud., Nom. Bot. Phan., ed. 2, 1: 382. 1840; D. Dietr., Syn. Pl. 3: 615. 1843; Walp., Repert. Bot. Syst. 4: 100 & 112. 1845; Schau. in A. DC., Prodr. 11: 660. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 105 & 502. 1858; Seem., Fl. Vit. 188. 1866; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 560 (1893) and imp. 1, 2: 1219. 1895; Briq., Bull. Herb. Boiss., ser. 1, 4: 348. 1896; H. J. Lam, Verbenac. Malay. Arch. 320 & 363. 1919; Bakh. in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 77, 108, & viii. 1921; Mold., Geogr. Distrib. Avicenn. 14, 23, & 37. 1939; Mold., Prelim. Alph. List Inv. Names 19. 1940; Mold., Suppl. List Inv. Names 2. 1941; Mold., Alph. List Inv. Names 17 & 21. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 16, 34, 72, 80, & 89. 1942; Mold., Alph. List Cit. 2: 336, 487, & 561 (1948) and 3: 692 & 881. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 29, 72, 158, & 180. 1949; Mold., Résumé 35, 82, 215, 255, 256, 261, 262, 272, & 448. 1959; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 698 & 699. 1960; Mold., Résumé Suppl. 4: 7. 1962; Langman, Select. Guide Lit. Flow. Pl. Mex. 160 & 1010. 1964; Gibson, Fieldiana Bot. 24 (9): 195. 1970; Mold., Fifth Summ. 1: 69, 140, 272, 358, 432, 433, 441, 443, & 461 (1971) and 2: 732, 863, & 969. 1971; Mold., Phytologia 32: 46. 1975; Anon., Biol. Abstr. 61: AC1.581. 1976; Hocking, Excerpt. Bot. A.28: 171. 1976; Mold., Phytologia 34: 262--264 & 266--269. 1976; Mold., Phytol. Mem. 2: 259, 267, 269, 270, 291, 306, 324, 325, 331, 349, 381, 382, 384, 385, 390, 391, 461, 462, & 538. 1980; Brennan, Ind. Kew. Suppl. 16: 71. 1981; Mold., Phytologia 50: 255. 1982; H. N. & A. L. Mold. in Dassan. & Fosb., Rev. Handb. Fl. Ceyl. 4: 411 & 454--456. 1983.

This form differs from the typical form of the species in having its leaf-blades on the flowering and/or fruiting branches or branchlets uniformly smaller, usually only 2--4 cm. long and 1--2 cm. wide, narrowly elliptic to obovate or rotund, apically mostly obtuse to rounded or even emarginate, basally acute or attenuate.

This form appears to occur sporadically in Pakistan, India, Sri Lanka, Indochina, the Philippine Islands, Papua, and the Phoenix Islands and its taxonomic status is uncertain. [to be continued]